

October 24, 2016

Ms. Nicole Gleason  
Diepenbrock Elkin Gleason LLP  
500 Capitol Mall, Suite 2200  
Sacramento, CA 95814

Re: Geotechnical Engineering Assessment of Dairy Farm Storage Pond Berm  
4207 West Linwood Avenue, Turlock, California  
*SFB Project No.: 727-1*

Ms. Gleason:

In accordance with your request, Stevens, Ferrone & Bailey Engineering Company, Inc. (SFB) has performed a geotechnical investigation, slope stability analysis, and evaluation of the cause of the previous berm breach of the existing storage pond's southern soil berm located at the former John Nunes Dairy #2 at 4207 West Linwood Avenue in Turlock, California. As part of our work, we reviewed the following provided documents (for reference, attached as Appendix D):

- Previous inspection reports prepared by Central Valley Regional Water Quality Control Board (CVRWQCB) dated 4/5/10, 6/8/10, 5/5/11, 6/23/11, 5/21/14, and 11/23/15;
- The site California Water Code Section 13267 Order issued by CVRWQCB dated 1/15/16;
- Review letter for soil assessment for the previous expansion of waste pond and settling basin prepared by CVRWQCB dated 5/11/01;
- The site Holding/Separation Pond Site Assessments prepared by Mr. Joe Ramos in 2000 (undated);
- The site Waste Management Plan Report (Attachment B in response to General Order No. R5-2007-0035; 7/1/10 deadline); and
- Field photographs of the southern berm breach section and buried pipe taken by Mr. Mike Borba (Property Owner).

**1.0 Existing Dairy Farm Storage Pond and Soil Berm**

At the time of our site investigation on May 4, 2016 and as shown on Figure 1, the wastewater storage pond was located to the north of the dairy farm corral. The pond was rectangular in shape and had plan dimensions of about 590 feet by 230 feet. The bottom of the pond was estimated to be about 10 feet below the top of the surrounding berm. A concrete lined TID (Turlock Irrigation District) canal was located at the base (outboard side) of the southern berm.

According to our review of the site Holding/Separation Pond Site Assessments and historical photographs of the site (see Appendix D for references), the existing storage pond was expanded in 2000 to the current size. The estimated original pond boundaries are shown on Figure 1 for reference. The southern berm is part of the original pond that was constructed at an unknown date.

It is our understanding that a breach of the southern berm occurred in the morning of November 20, 2015, which resulted in wastewater discharging to the areas south of the storage pond. The approximate location of the breach is shown on Figure 1.

Based on our review of the available documents and field photographs of the breach (see Appendix D for references), the breach appears to be a wash out failure of the berm as a result of water seeping along the interface of a buried pipe. From the photos, we estimate the breach appeared to be about 10 to 15 feet wide with nearly vertical side walls and extended toward the concrete lined TID canal. We did not observe any evidence that the breach extended below the canal. The exact cause of the breach was unknown at the time of the failure. It is also our understanding that a 4-inch diameter PVC pipe (unknown to the property owner) and an electrical conduit (that extends to an existing pump located near the southeastern corner of the pond, and was also unknown to the property owner) were observed within the breached berm section (the 4-inch diameter PVC pipe shown in the field photographs at the time of the breach). A portion of the 4-inch diameter PVC pipe extended toward the inboard face of the storage pond. It should be noted that in a few of the photos of the breach (copies of the reference photos are attached in the back of Appendix D) and as noted in the complaint, a small sinkhole is observed on the top of the berm; the sinkhole formed as a result of the loss of conduit pipe backfill during the formation of the breach. Other sinkholes likely formed on the ground surface directly above and in the vicinity of the breach and immediately prior to the complete breach of the berm. It should be noted that due to the sandy soils within the berm, the sinkholes would have formed no more than a few hours (and more likely, a few minutes) prior to the complete breach of the berm. The sinkholes would have similar visual characteristics as rodent burrows.

SFB performed reconnaissance of the dairy farm storage pond and surrounding area on May 4, 2016. At the time our reconnaissance, the breach had been repaired and the pond water level was about 3 feet below top of the southern berm. An about 40-foot long section of the TID canal concrete lining had been replaced. Some large and small animal burrows were also observed on the outer face of the southern berm. Cross-Section A – A' (attached as Figure 2) shows the approximate ground profile across the southern berm based on our field measurements and EAC Engineering surveys (attached in Appendix C for reference). All ground features are approximately shown on Figure 2.

An exploratory pit and trenches were excavated by the property owner near the southwestern corner of the pond during our visit to search for the unknown buried PVC pipe. The pit and trenches encountered silty sands but also uncovered concrete debris and varying amounts of trash. A 4-inch diameter solid PVC pipe was uncovered during the search. The pipe was located at depths of about 2 to 3 feet deep. One end of the pipe appeared to extend easterly along the southern berm toward the previous breach location. The other end of the pipe appeared to zip-zag southwesterly toward unknown locations. The dates marked on the wall of the pipes indicate these pipes were manufactured in September 1976 and February 1978. The actual installation date of these pipes is unknown but it is likely the pipes were installed sometime around the manufacturing date. The approximate alignment of the uncovered pipes is shown on Figure 1 for reference. Both ends of the discovered pipe were capped by the property owner prior to backfill of the pit and trenches.

## **2.0 Geotechnical Investigation**

Five exploratory borings (SFB-1 through SFB-5) were performed and logged by one of SFB's registered Geotechnical Engineers on May 4, 2016 along the southern berm of the pond to a maximum depth of about 8-1/2 feet using a 3-inch diameter hand auger. The Geotechnical Engineer also inspected and logged the exploratory pit excavated by the property owner. Soil samples were retrieved from the borings and pit for engineering evaluations and laboratory testing. The approximate location of the borings and pit are shown on the attached Site Plan, Figure 1.

The near-surface soil materials encountered in our borings generally consisted of medium dense sandy fills and native silty sand that extended to a depth of about 7-1/2 feet below top of the berm. The sandy fills appeared to have been compacted during original berm placement. Below the surficial fill and sand layers, native stiff sandy clays were encountered that extended to the maximum depth explored of about 8-1/2 feet in Boring SFB-3. The subsurface soils encountered by the pit were similar to those encountered by our borings. Detailed descriptions of the materials encountered in the borings and pit are presented on the logs in Appendix A. The

existing southern berm stratigraphic information is shown on the representative Cross-section A - A' (attached as Figure 2).

No groundwater was encountered in our borings to the maximum depth explored of about 8-1/2 feet below the top of the southern berm. In addition, we did not observe any evidence of seepage on the berm slopes surrounding the pond or on the ground adjacent to the berms.

According to the Water Data Library of California Department of Water Resources<sup>1</sup>, the most recent groundwater level reported on March 2, 2016 from a nearby observation well (374780N1208879W001 / TID005; near the intersection of W Linwood Avenue and S Tegner Road) was at a depth of about 17.7 feet below ground surface (or at an elevation of about 70.5 feet; datum unknown).

### 3.0 Engineering Properties of Onsite Subsurface Soil Materials

Engineering properties of the subsurface fills and soils were derived from our field and laboratory testing results and typical engineering correlations. The strength properties of the onsite sandy fills and soils were estimated based on correlation charts from NAVFAC Design Manual 7.1 (attached in Appendix C for reference). We estimate the onsite sandy fills and soils generally have a relative density of about 50 percent and are estimated to have internal friction angles of about 30 to 34 degrees. It is our opinion that the following soil engineering properties are appropriately conservative to be used in our analyses. The results of our laboratory testing are included in Appendix B.

Material	Unit Weight (pcf)	Static and Pseudo-Static Strength Parameters	
		c' Cohesion (psf)	$\phi'$ Friction Angle (deg)
Sandy Fill/Sand	120	100	30

### 4.0 Slope Stability Analyses of Southern Berm

SFB performed slope stability analyses using a two dimensional, limit equilibrium computer program, GSLOPE (Mitre Software, 1999) to evaluate the global and internal stability of the southern berm. The procedures presented in the Southern California Earthquake Center (SCEC) publication, *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California*, were followed during

---

<sup>1</sup><http://www.water.ca.gov/waterdatalibrary/>



our analyses. Please refer to the SCEC document for further details regarding the definition of the procedures and parameters.

For earthquake loading conditions, a seismic coefficient (k) of 0.16 was applied in our pseudo-static analyses for the purpose of screening. This coefficient was determined based on a design-basis maximum ground acceleration of 0.28g (per USGS 2008 deaggregation model using a 10% probability of being exceeded in a 50-year period; a 475-year return period with a firm to stiff soil site condition), a causative magnitude 6.6 earthquake located 25.3 kilometers away, and a threshold displacement of 5 centimeters (approximately 2 inches). As stated in the SCEC publication, the threshold displacements provide an index of slope performance. The 5 centimeters (2 inches) value distinguishes conditions in which very little displacement is likely from conditions in which moderate or higher displacement are likely.

The representative Cross-Section A – A' (across the southern berm of the storage pond where the breach occurred) was used for our slope stability analyses. The location of the section is shown on Figure 1, and the cross-section is shown on Figure 2. The topographic information shown on the cross-section is based on our field measurements and the results of the EAC Engineering surveys (attached in Appendix C for reference); all the ground features have been approximately located. The stratigraphic information shown on the cross-section is based upon the results of our borings.

No groundwater was encountered in our borings to the maximum depth explored of about 8-1/2 feet below the top of the southern berm. A conservatively assumed perched groundwater level at the adjacent corral ground surface with a partially saturated soil berm condition were used in our Cases 1 and 2 analyses to account for possible water recharging around and below the storage pond. A totally saturated southern berm condition (where the pond water was assumed to reach the top of the berm elevation) was used in our Case 3 analysis (a highly unlikely and worst case scenario) to evaluate its impact on the berm stability. Our Case 4 condition analyses assumed the pond water is at the top of the berm elevation, the berm is saturated with water, and the outer 5 feet of berm is removed due to animal burrows.

## **5.0 Slope Stability Results**

The table below summarizes the results of our slope stability analyses for Cross-Section A-A' (the southern berm where the breach occurred) under several loading conditions (Cased 1 through 4) as described above. The cross-section profiles, soil engineering properties used in the analyses, and the detailed results of the analyses are presented on the computer program printouts in the attached Appendix C.

Case	Loading Conditions	Factor of Safety against Sliding	
		Static (minimum required 1.5)	Pseudo-Static (Earthquake Loading $k = 0.16$ ) (minimum required 1.0)
1	Pond Water Level at 3 Feet below Top of Berm with Partially Saturated Soil Berm	2.5	1.8
2	Pond Water Level at Top of Berm with Partially Saturated Soil Berm	2.3	1.6
3	Pond Water Level at Top of Berm with Totally Saturated Soil Berm	1.7	1.2*
4	Same as Case 3 with 5 Feet of Outboard Berm Face Removed Due to Animal Burrows	2.1	1.4*

\*Note: This condition is highly unlikely since a major earthquake would have to occur at the same time the pond water is at the top of the berm and the entire berm is saturated.

The results of our analyses indicate that the factors of safety against sliding under static loading conditions for all cases are greater than the minimum acceptable value of 1.5. In addition, the factor of safety against sliding for Cases 1, 2, 3, and 4 pass the screen criteria outlined in the SCEC publication (factor of safety greater than one) when applying a seismic coefficient of 0.16. Therefore, our slope stability analysis results show that the global and internal stability of the southern berm is acceptable.

## 6.0 Conclusions

As seen in the photos of the breach (included in Appendix D for reference), a 4-inch diameter PVC pipe was exposed within the breach area. It is our understanding that the pipe was discovered at the time of the breach. As seen in the photos, the pipe was buried within the southern berm and that the pipe made a 90 degree turn toward the storage pond. The discovered pipe's location was unknown to the current property owner at the time of the breach.

It is nearly impossible to achieve adequate compaction around pipes since the pipe deflects the downward compaction energy, and commonly, the person performing the compaction does not want to break the pipe and tends to use less compaction energy near a pipe. As a result, water can easily seep along the boundary between a pipe and surrounding soil since the soil is "looser"

and less dense (the soil particles are not “packed” as tightly) around a pipe and has a higher permeability than soils farther away from a pipe.

Since the discovered 4-inch diameter PVC pipe had extended toward the pond area, water from the pond could begin to flow along the interface between the pipe and the surrounding fill soils and also within the poorly compacted soils surrounding the PVC pipe. Over a period of time, this localized seepage flow increases in length and eventually flows out of the southern side of the berm. This seepage can easily occur over a short period of time. Once the seepage extends to the outer face of the berm, the water saturated soil particles begin to flow towards the outer face of the berm (also known as soil piping) and increases in volume to the point when the soil berm loses enough soil mass that it can no longer retain the pond water, resulting in water flow through the breach.

As part of our work (as described in Section 5.0), we performed detailed slope stability analyses of the performance of the berm when subjected to varying water levels within the pond. The results show that the southern berm breach did not occur as a result of pond water saturating the berm. Even when assuming the pond water is at the same height as the berm and the berm becomes saturated (our Case 3 analyses; a worst case condition with no evidence that it has occurred in the past), the berm slopes do not fail. It is the introduction of water seepage along the PVC pipe that extends toward the lagoon waste water that caused the water seepage to the outer berm wall that resulted in the berm failure. Without the introduction of water via the PVC pipe, the soil piping would not have occurred and the berm would not have failed.

In addition to the analyzed conditions described previously, we performed a stability analysis of a condition (our Case 4 analyses) where the outer 5 feet of berm is removed under high pond water height (water at the same elevation as the berm) and the berm is saturated. This analysis was performed to account for burrowing animal disturbance along the outboard sides of the berm. The analysis resulted in the static and earthquake factors of safety greater than the minimum requirements of 1.5 and 1.0, respectively. Therefore, this analysis indicates that rodent holes did not, and could not, cause the lagoon berm to fail.

Based on the results of our work, we conclude that the breach is the result of soil piping along the interface between the discovered 4-inch diameter PVC pipe (the pipe that was found extending toward the pond within the breach area) and the surrounding soils.

## **7.0 Conditions and Limitations**

The analysis, opinions, and recommendations submitted in this report are based in part upon the data obtained from SFB’s analysis and upon information provided by others. Site exploration

and testing characterizes subsurface conditions only at the locations where the explorations or tests are performed; actual subsurface conditions at other locations may be different than those described in this report. Variations of subsurface conditions from those analyzed or characterized in this report are not uncommon. With respect to the geotechnical investigation, it should be noted that changes in the surface and subsurface conditions can occur over time as a result of either natural processes or human activity and may affect the validity of the conclusions and recommendations in this report. Our attached boring and pit logs and related information depict location specific subsurface conditions encountered during our field investigation. The approximate locations of the borings and pit were determined by using pacing or landmark references and should be considered accurate only to the degree implied by the method used.

If you have any questions or need additional information, please call our office.

Sincerely,

**Stevens, Ferrone & Bailey Engineering Company, Inc.**



Taiming Chen, P.E., G.E.  
*Civil/Geotechnical Engineer*



Ken Ferrone, P.E., G.E., C.E.G.  
*Civil/Geotechnical Engineer*  
*Certified Engineering Geologist*



TC/KCF

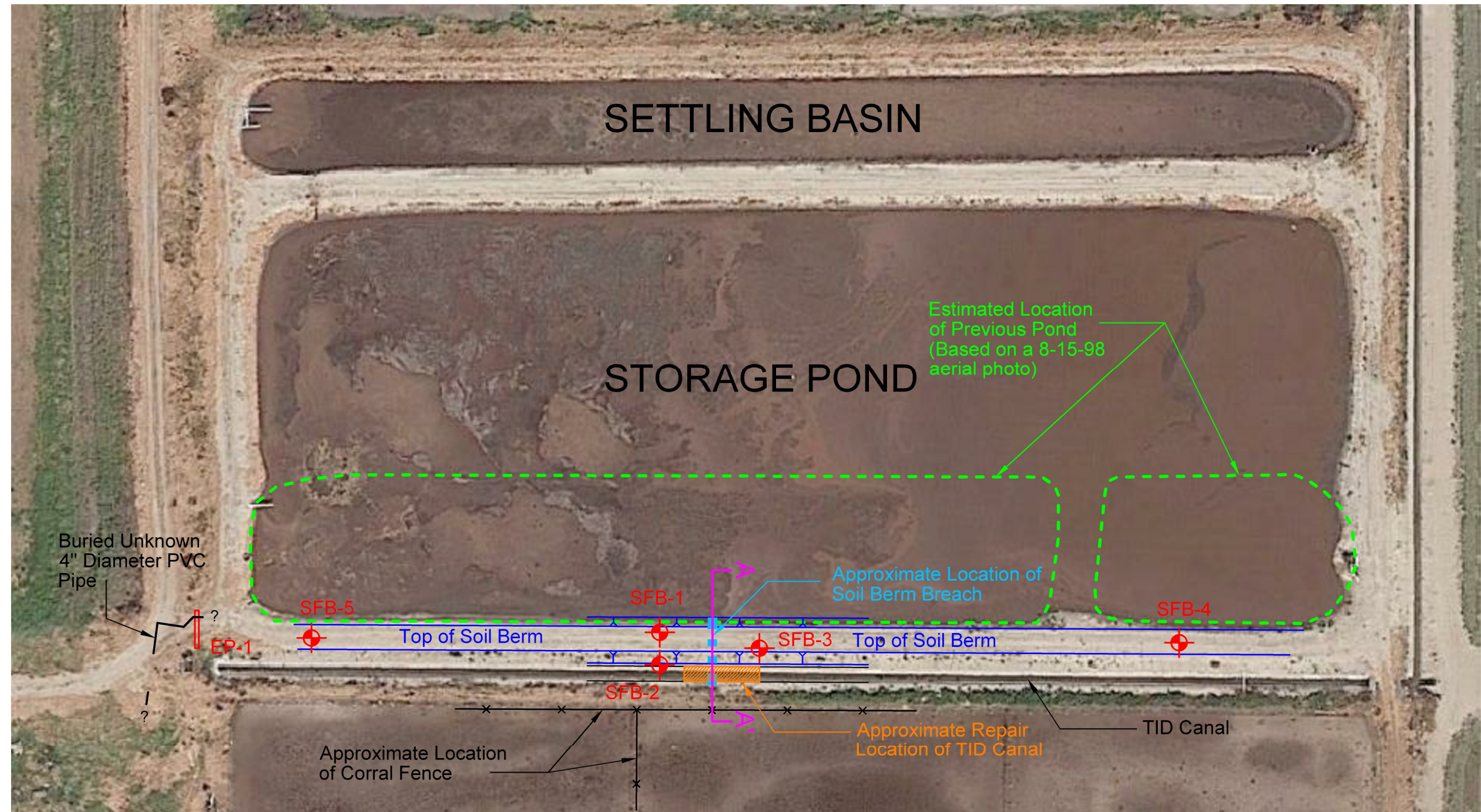
Copies: Addressee (1 by email)

Attachments: Figures 1 & 2  
Appendices A, B, C, and D

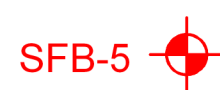
## **FIGURES**

---





## KEY



APPROXIMATE LOCATION OF SFB  
EXPLORATORY BORING (5/4/16)



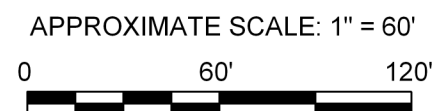
APPROXIMATE LOCATION OF  
EXPLORATORY PIT BY OTHERS  
(5/4/16) - LOGGED BY SFB



APPROXIMATE LOCATION OF  
CROSS-SECTION (SEE FIGURE  
2 FOR THE SECTION)

### NOTE:

1. Base map taken from Google Earth image dated 3/29/15.
2. Ground features are approximate.



DATE
June 2016
PROJECT NO.
727-1

**Stevens**  
**Serrone &**  
**Bailey**  
Engineering Company, Inc

1600 Willow Pass Court  
Concord, CA 94520  
Tel 925.688.1001  
Fax 925.688.1005  
www.SFandB.com

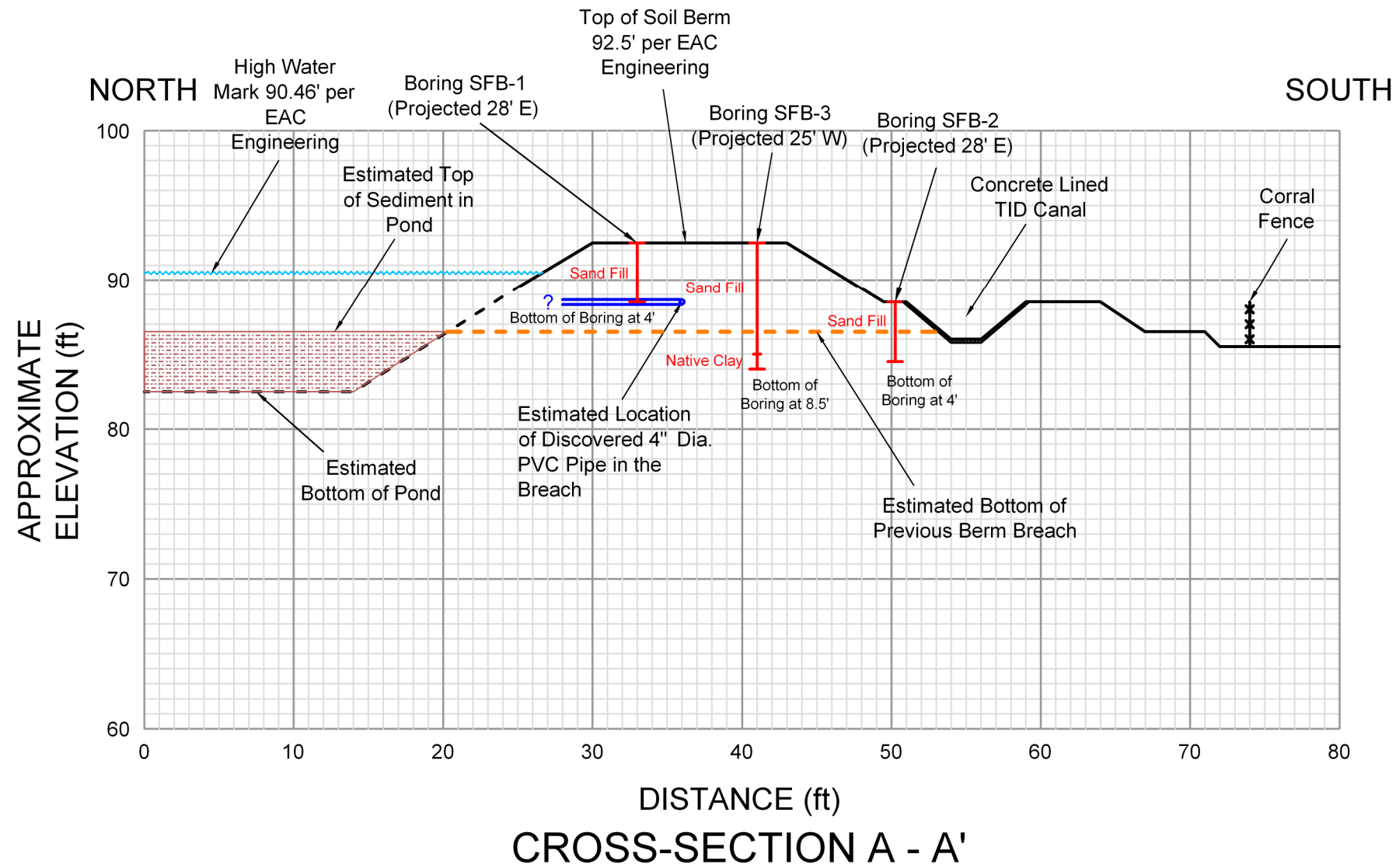
SITE PLAN

DAIRY FARM POND  
4207 West Linwood Avenue, Turlock, California

FIGURE

1

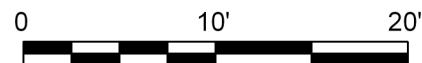




**NOTE:**

1. See Figure 1 for location of section.
2. Elevations and ground features are approximate.
3. See report for additional conditions and limitations.

HORIZONTAL & VERTICAL SCALE: 1" = 10'



DATE

October 2016

PROJECT NO.

727-1

**Stevens**  
**Serrone &**  
**Bailey**  
Engineering Company, Inc

1600 Willow Pass Court  
Concord, CA 94520  
Tel 925.688.1001  
Fax 925.688.1005  
www.SFandB.com

CROSS-SECTION A - A'

**DAIRY FARM POND**  
4207 West Linwood Avenue, Turlock, California

FIGURE

**2**



**APPENDIX A**  
Field Investigation

---

## **APPENDIX A**

### **Field Investigation**

Our field investigation for the dairy farm storage pond at 4207 West Linwood Avenue in Turlock, California, consisted of surface reconnaissance and a subsurface exploration program. Geotechnical reconnaissance of the site and surrounding area was performed on May 4, 2016. Subsurface exploration was performed using a 3-inch diameter hand augers. Five exploratory borings were drilled on May 4, 2016. In addition, the excavation of a pit was observed and logged on May 4, 2016. A registered Geotechnical Engineer continuously logged the soils encountered in the borings and the pit in the field. The soils are described in general accordance with the Unified Soil Classification System (ASTM D2487). The logs of the borings and the pit as well as a key for the classification of the soil (Figure A-1) are included as part of this appendix.

Representative samples were obtained from our exploratory borings and pit at selected depths appropriate to the investigation. All samples were transmitted to our offices for evaluation and appropriate testing. The attached boring and pit logs and related information show our interpretation of the subsurface conditions at the dates and locations indicated, and it is not warranted that they are representative of subsurface conditions at other locations and times.

# UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		grf	ltr	Description	Major Divisions		grf	ltr	Description
Coarse Grained Soils	Gravel		GW	Well-graded gravels or gravel sand mixtures, little or no fines	Soils	Sils And Clays LL < 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			GP	Poorly-graded gravels or gravel sand mixture, little or no fines				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			GM	Silty gravels, gravel-sand-silt mixtures				OL	Organic silts and organic silt-clays of low plasticity
			GC	Clayey gravels, gravel-sand-clay mixtures					
	Sand And Sandy Soils		SW	Well-graded sands or gravelly sands, little or no fines		Sils And Clays LL > 50		MH	Inorganic silts, micaceous or diatomaceous fine or silty soils, elastic silts
			SP	Poorly-graded sands or gravelly sands, little or no fines				CH	Inorganic clays of high plasticity, fat clays
			SM	Silty sands, sand-silt mixtures				OH	Organic clays of medium to high plasticity
			SC	Clayey sands, and-clay mixtures					
			Highly Organic Soils		PT	Peat and other highly organic soils			

## GRAIN SIZES

U.S. STANDARD SERIES SIEVE

CLEAR SQUARE SIEVE OPENINGS

	200	40	10	4	3/4"	3"	12"	
Sils and Clays	Sand			Gravel		Cobbles	Boulders	
	Fine	Medium	Coarse	Fine	Coarse			

## RELATIVE DENSITY

Sands and Gravels	Blows/Foot*
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

## CONSISTENCY

Sils and Clays	Blows/Foot*	Strength (tsf)**
Very Soft	0 - 2	0 - 1/4
Soft	2 - 4	1/4 - 1/2
Firm	4 - 8	1/2 - 1
Stiff	8 - 16	1 - 2
Very Stiff	16 - 32	2 - 4
Hard	Over 32	Over 4

\*Number of Blows for a 140-pound hammer falling 30 inches, driving a 2-inch O.D. (1-3/8" I.D.) split spoon sampler.  
\*\* Unconfined compressive strength.

## SYMBOLS & NOTES

	Standard Penetration sampler (2" OD Split Barrel)		Shelby Tube
	Modified California sampler (3" OD Split Barrel)		Pitcher Barrel
	California Sampler (2.5" OD Split Barrel)		HQ Core
	Ground Water level initially encountered		
	Ground Water level at end of drilling		

## Increasing Visual Moisture Content

▲ Saturated  
Wet  
Moist  
Damp  
Dry

## Constituent Percentage

PI = Plasticity Index  
LL = Liquid Limit  
R = R-Value

trace <5%  
some 5-15%  
with 16-30%  
-y 31-49%

**Stevens,  
Ferrone &  
Bailey**  
Engineering Company, Inc.

1600 Willow Pass Court  
Concord, CA 94520  
Tel: 925-688-1001  
Fax: 925-688-1005


## KEY TO EXPLORATORY BORING LOGS

**DAIRY FARM POND**  
**4207 West Linwood Avenue, Turlock, California**


PROJECT NO.	DATE	FIGURE NO.
<b>727-1</b>	<b>June 2016</b>	<b>A-1</b>





DRILL RIG	Hand Auger	SURFACE ELEVATION	---	LOGGED BY	TC
DEPTH TO GROUND WATER	Not Encountered	BORING DIAMETER	3-inch	DATE DRILLED	05/04/16

DESCRIPTION AND CLASSIFICATION			DEPTH (FEET)	SAMPLER	SPT N-VALUE	WATER CONTENT (%)	DRY DENSITY (PCF)	UNC. COMP. (KSF)	OTHER TESTS
DESCRIPTION AND REMARKS	CONSIST	SOIL TYPE							
FILL: SAND (SM), brown, fine- to medium-grained, with to silty, dry. Dry to damp below 1'.	medium dense		0			9	108		
A 1.5" diameter subangular gravel at 3'. Silty, damp below 3'.						11			
Bottom of Boring = 4 feet Notes: Stratification is approximate, variations must be expected. Blowcounts converted to SPT N-values. See Report for additional details.			5			10			
			10						
			15						
			20						
			25						
			30						


EXPLORATORY BORING LOG 727-1.GPJ STEVENS FERRONE BAILEY.GDT 5/19/16

 <div> 1600 Willow Pass Court  Concord, CA 94520  Tel: 925-688-1001  Fax: 925-688-1005 </div>	<b>EXPLORATORY BORING LOG</b>		
	<b>DAIRY FARM POND</b> <b>4207 West Linwood Avenue, Turlock, California</b>		
	PROJECT NO.	DATE	BORING NO.
	<b>727-1</b>	<b>June 2016</b>	<b>SFB-2</b>


DRILL RIG Hand Auger	SURFACE ELEVATION ---	LOGGED BY TC
DEPTH TO GROUND WATER Not Encountered	BORING DIAMETER 3-inch	DATE DRILLED 05/04/16

DESCRIPTION AND CLASSIFICATION			DEPTH (FEET)	SAMPLER	SPT N-VALUE	WATER CONTENT (%)	DRY DENSITY (PCF)	UNC. COMP. (KSF)	OTHER TESTS
DESCRIPTION AND REMARKS	CONSIST	SOIL TYPE							
FILL: SAND (SM), brown, fine- to medium-grained, with to silty, dry to damp.	medium dense		0			9	120		At 1': Medium Sand = 8% Fine Sand = 48% Silt & Clay = 44%  At 4': Medium Sand = 16% Fine Sand = 36% Silt & Clay = 48% At 6': Medium Sand = 9% Fine Sand = 55% Silt & Clay = 36% At 8': Liquid Limit = 30 Plasticity Index = 18 Medium Sand = 5% Fine Sand = 34% Silt = 32% Clay = 29%
FILL: SAND (SM), mottled gray brown, fine- to medium-grained, silty, some to with clay, damp.	medium dense					9	114		
FILL: SAND (SM), grayish brown, fine- to medium-grained, silty, dry to damp.	medium dense		5			14			
CLAY (CL), grayish brown, silty, sandy(fine- to medium-grained), damp.	stiff					11			
Bottom of Boring = 8.5 feet Notes: Stratification is approximate, variations must be expected. Blowcounts converted to SPT N-values. See Report for additional details.			10			14			
			15						
			20						
			25						
			30						


EXPLORATORY BORING LOG 727-1.GPJ STEVENS FERRONE BAILEY.GDT 5/19/16

 <div> 1600 Willow Pass Court  Concord, CA 94520  Tel: 925-688-1001  Fax: 925-688-1005 </div>	<b>EXPLORATORY BORING LOG</b>		
	<b>DAIRY FARM POND</b> <b>4207 West Linwood Avenue, Turlock, California</b>		
	PROJECT NO.	DATE	BORING NO.
	<b>727-1</b>	<b>June 2016</b>	<b>SFB-3</b>

DRILL RIG    Hand Auger	SURFACE ELEVATION    ---	LOGGED BY    TC
DEPTH TO GROUND WATER    Not Encountered	BORING DIAMETER    3-inch	DATE DRILLED    05/04/16


DESCRIPTION AND CLASSIFICATION			DEPTH (FEET)	SAMPLER	SPT N-VALUE	WATER CONTENT (%)	DRY DENSITY (PCF)	UNC. COMP. (KSF)	OTHER TESTS
DESCRIPTION AND REMARKS	CONSIST	SOIL TYPE							
FILL: SAND (SM), brown, fine- to medium-grained, silty, dry to damp.	medium dense		0			11	116		
			14						
			11						
			5			12			
Bottom of Boring = 6 feet Notes: Stratification is approximate, variations must be expected. Blowcounts converted to SPT N-values. See Report for additional details.			10						
			15						
			20						
			25						
			30						


EXPLORATORY BORING LOG 727-1.GPJ STEVENS FERRONE BAILEY.GDT 5/19/16

 <div> 1600 Willow Pass Court  Concord, CA 94520  Tel: 925-688-1001  Fax: 925-688-1005 </div>	<b>EXPLORATORY BORING LOG</b>		
	<b>DAIRY FARM POND</b> <b>4207 West Linwood Avenue, Turlock, California</b>		
	PROJECT NO.	DATE	BORING NO.
	<b>727-1</b>	<b>June 2016</b>	<b>SFB-4</b>




DRILL RIG	Hand Auger	SURFACE ELEVATION	---	LOGGED BY	TC
DEPTH TO GROUND WATER	Not Encountered	BORING DIAMETER	3-inch	DATE DRILLED	05/04/16


DESCRIPTION AND CLASSIFICATION			DEPTH (FEET)	SAMPLER	SPT N-VALUE	WATER CONTENT (%)	DRY DENSITY (PCF)	UNC. COMP. (KSF)	OTHER TESTS
DESCRIPTION AND REMARKS	CONSIST	SOIL TYPE							
SAND (SM), brown, fine- to medium-grained, with to silty, dry to damp. 1" diameter subangular gravel at 1.5'.  Possible pipe at 3'. Bottom of Boring = 3 feet Notes: Stratification is approximate, variations must be expected. Blowcounts converted to SPT N-values. See Report for additional details.	medium dense		0						
			5						
			10						
			15						
			20						
			25						
			30						

 <div> 1600 Willow Pass Court  Concord, CA 94520  Tel: 925-688-1001  Fax: 925-688-1005 </div>		<b>EXPLORATORY BORING LOG</b>		
		<b>DAIRY FARM POND</b> <b>4207 West Linwood Avenue, Turlock, California</b>		
		PROJECT NO.	DATE	BORING NO.
		<b>727-1</b>	<b>June 2016</b>	<b>SFB-5</b>

EXCAVATOR TYPE John Deere 410L	SURFACE ELEVATION ---	LOGGED BY TC
DEPTH TO GROUND WATER Not Encountered	BUCKET WIDTH 24-inch	DATE EXCAVATED 05/04/16

DESCRIPTION AND CLASSIFICATION			DEPTH (FEET)	SAMPLER	SPT N-VALUE	WATER CONTENT (%)	DRY DENSITY (PCF)	POCKET PEN. (KSF)	OTHER TESTS
DESCRIPTION AND REMARKS	CONSIST	SOIL TYPE							
FILL: SAND (SM), brown, fine- to medium-grained, with to silty, dry to damp. Occasionally 1" to 2" diameter gravels. A 1" thick very dark gray to black sand lense at 2'. Found 4" PVC pipe at 2.5' deep near the north end of trench.	medium dense		0			9			
SAND (SM), brown, fine- to medium-grained, silty, dry to damp. Bottom of Pit = 4.5 feet Notes: Stratification is approximate, variations must be expected. See Report for additional details.	medium dense		5			13			
			9			9			
			9			9			
			10						
			15						
			20						
			25						
			30						

EXPLORATORY PIT LOG 727-1.GPJ STEVENS FERRONE BAILEY.GDT 5/19/16

 <div> 1600 Willow Pass Court  Concord, CA 94520  Tel: 925-688-1001  Fax: 925-688-1005 </div>	<b>EXPLORATORY PIT LOG</b>		
	<b>DAIRY FARM POND</b> <b>4207 West Linwood Avenue, Turlock, California</b>		
	PROJECT NO.	DATE	PIT NO.
	<b>727-1</b>	<b>June 2016</b>	<b>EP-1</b>

**APPENDIX B**  
Laboratory Investigation

---

## **APPENDIX B**

### **Laboratory Investigation**

Our laboratory testing program for the dairy farm storage pond at 4207 West Linwood Avenue in Turlock, California was directed toward a quantitative and qualitative evaluation of the physical and mechanical properties of the soils underlying the site.

The natural water content was determined on nineteen samples of the subsurface soils. The water contents are recorded on the boring logs at the appropriate sample depths.

Dry density determination was performed on six samples of the subsurface soils to evaluate their physical properties. The results of the tests are shown on the boring logs at the appropriate sample depths.

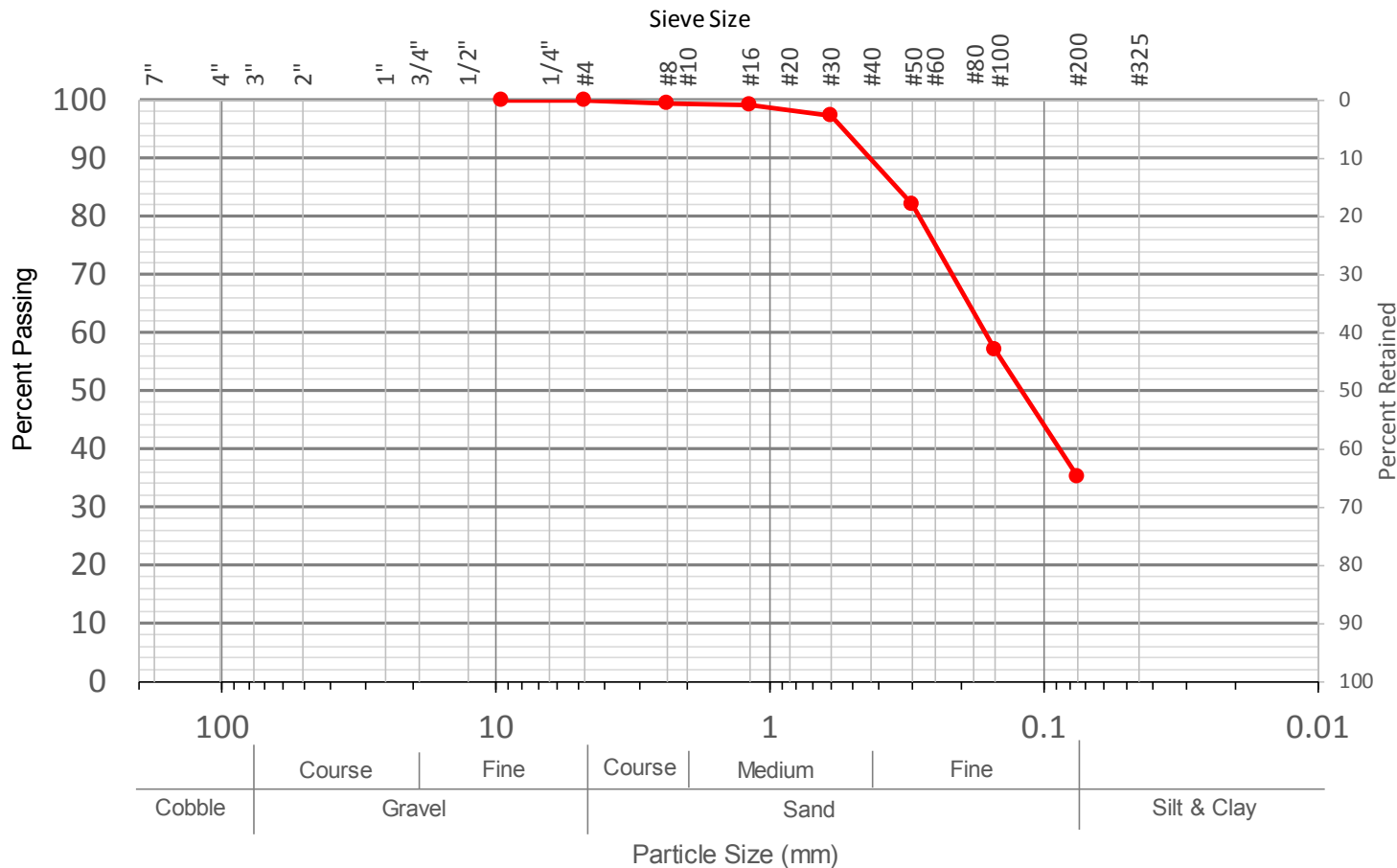
Atterberg Limit determinations were performed on one sample of the subsurface soils to determine the range of water content over which these materials exhibit plasticity. These values are used to classify the soil in accordance with the Unified Soil Classification System and to indicate the soil's compressibility and expansion potentials. The results of the tests are presented on the boring log at the appropriate sample depth and are also attached to this appendix.

Gradation and hydrometer tests were performed on five samples of the subsurface soils. These tests were performed to assist in the classification of the soils and to determine their grain size distribution. The results of the tests are presented on the boring logs at the appropriate sample depths and are also attached to this appendix.

# Sieve Analysis – ASTM C136

**Project Number:** 727-1      **Project Name:** Dairy Farm Pond  
**Sample Number:** B-1 @ 26"-30"      **Description:** Brown silty fine SAND (SM)  
**Sampled By:** TC      **Source:** Onsite

**Sampling Date:** 5/6/2016  
**Test Date:** 5/10/2016  
**Tested By:** R



Composite Sieve Data		
Standard Sieve Size	Percent Passing	Specs <sup>1</sup>
3"		
2.5"		
2"		
1.5"		
1"		
3/4"		
1/2"		
3/8"	100.0	
#4	99.9	
#8	99.6	
#16	99.3	
#30	97.3	
#50	82.1	
#100	57.0	
#200	35.2	

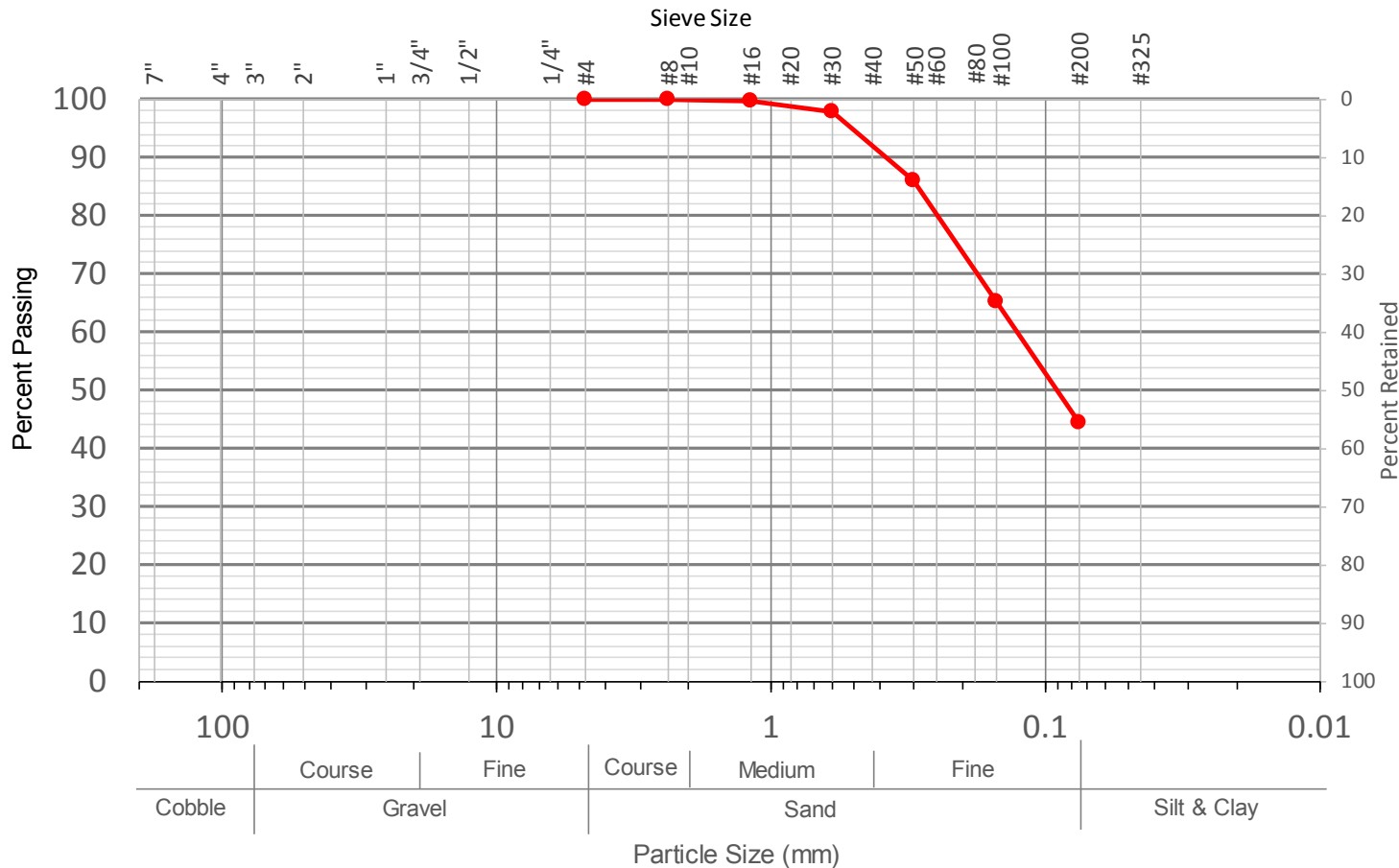
1 Specification

FOR MEDIATION/SETTLEMENT PURPOSES ONLY. PROTECTED BY EVIDENCE CODE SECTION 1152, 1154 & 1119 et. seq.

Sieve Analysis – ASTM C136

**Project Number:** 727-1      **Project Name:** Dairy Farm Pond  
**Sample Number:** B-3 @ 12"-17"  
**Description:** Brown silty fine SAND (SM)  
**Sampled By:** TC      **Source:** Onsite

**Sampling Date:** 5/6/2016  
**Test Date:** 5/10/2016  
**Tested By:** R



Composite Sieve Data		
Standard Sieve Size	Percent Passing	Specs <sup>1</sup>
3"		
2.5"		
2"		
1.5"		
1"		
3/4"		
1/2"		
3/8"		
#4	100.0	
#8	100.0	
#16	99.8	
#30	97.9	
#50	85.9	
#100	65.1	
#200	44.5	

1 Specification

FOR MEDIATION/SETTLEMENT PURPOSES ONLY. PROTECTED BY EVIDENCE CODE SECTION 1152, 1154 & 1119 et. seq.

# Sieve Analysis – ASTM C136

**Project Number:** 727-1

**Project Name:** Dairy Farm Pond

**Sampling Date:** 5/6/2016

**Sample Number:** B-3 @ 46"-  
51"

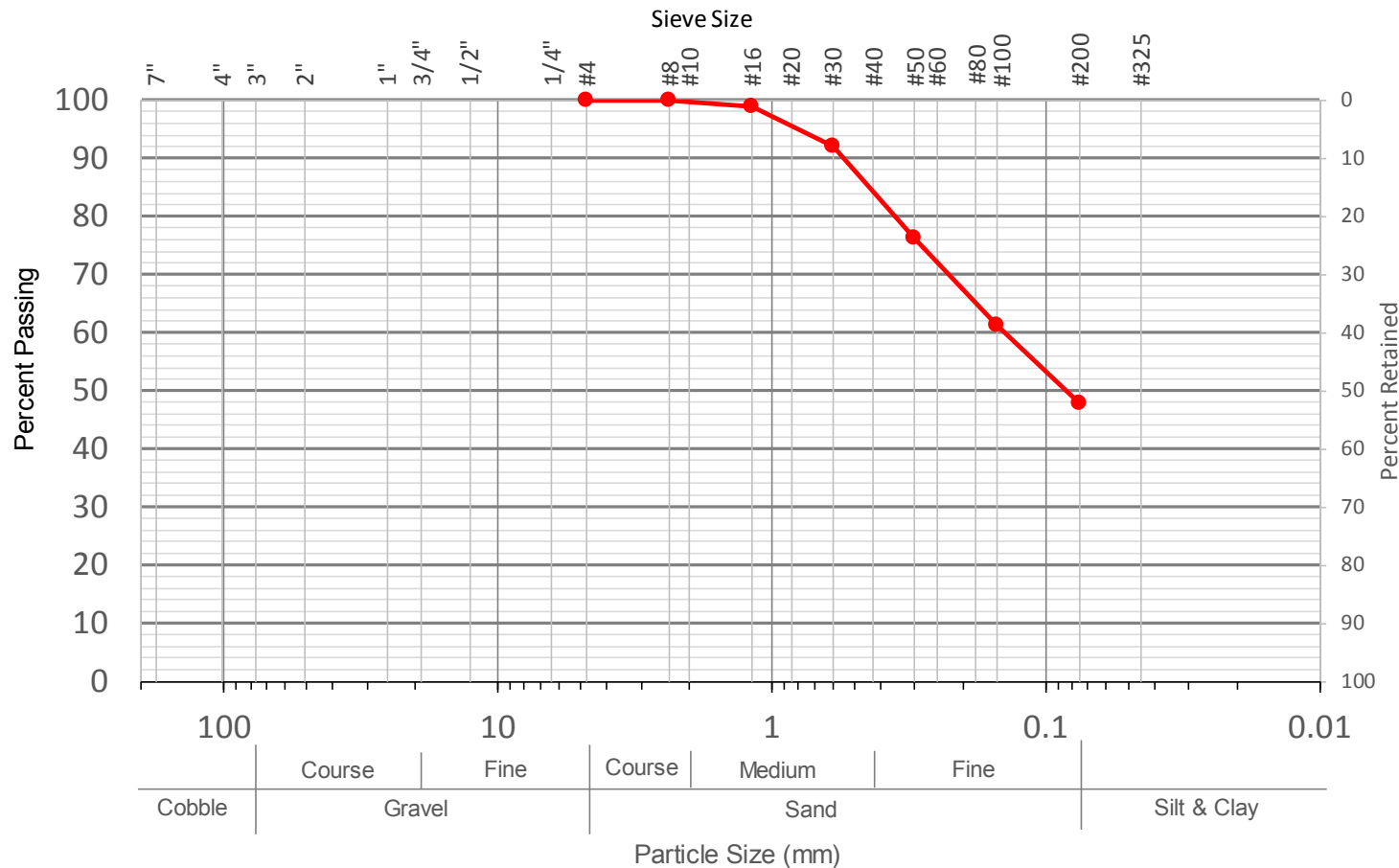
**Description:** Brown silty fine SAND (SM)

**Test Date:** 5/10/2016

**Sampled By:** TC

**Source:** Onsite

**Tested By:** R



Composite Sieve Data		
Standard Sieve Size	Percent Passing	Specs <sup>1</sup>
3"		
2.5"		
2"		
1.5"		
1"		
3/4"		
1/2"		
3/8"		
#4	100.0	
#8	99.8	
#16	98.8	
#30	92.1	
#50	76.3	
#100	61.3	
#200	47.7	

1 Specification

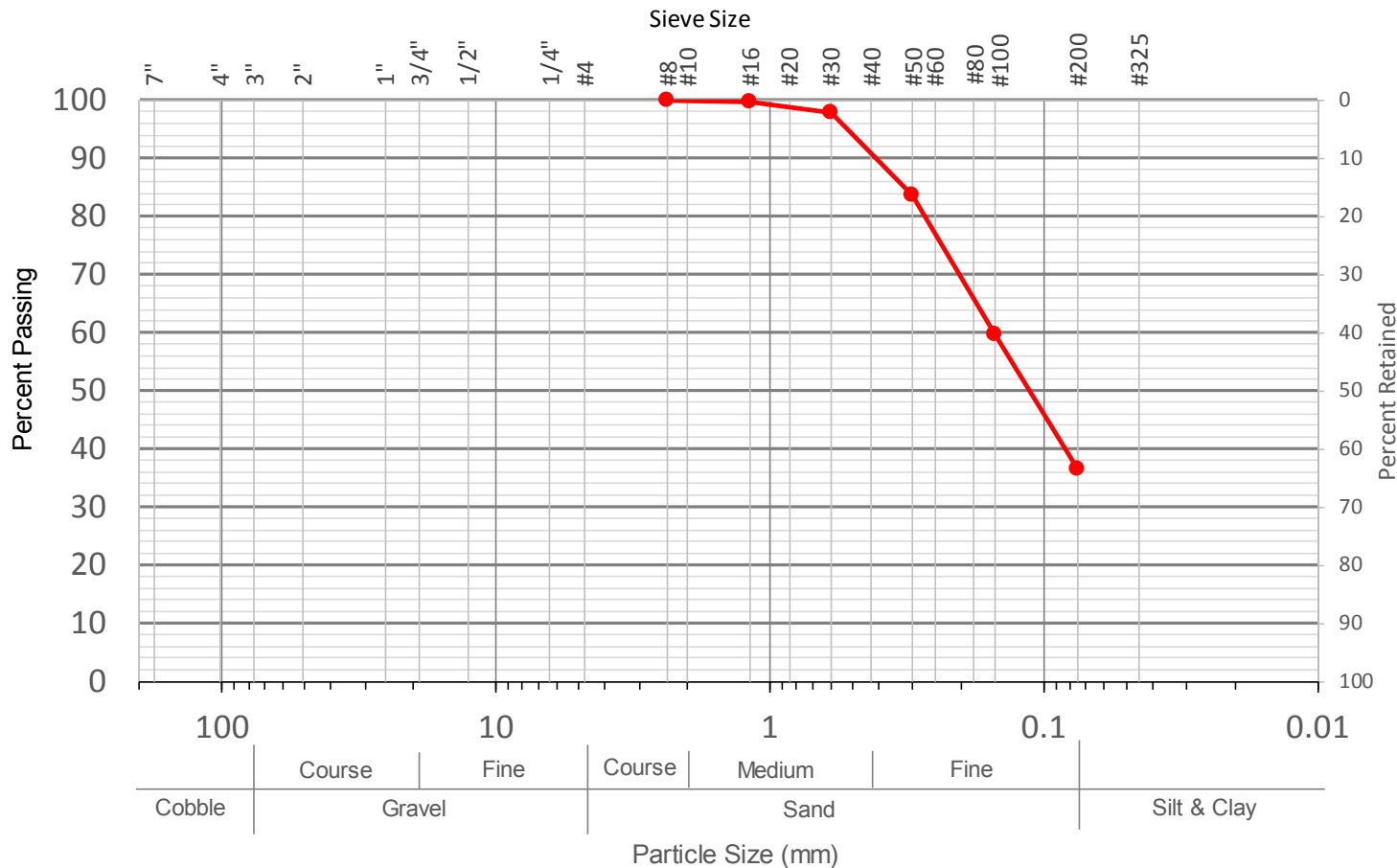
FOR MEDIATION/SETTLEMENT PURPOSES ONLY. PROTECTED BY EVIDENCE CODE SECTION 1152, 1154 & 1119 et. seq.



# Sieve Analysis – ASTM C136

**Project Number:** 727-1      **Project Name:** Dairy Farm Pond  
**Sample Number:** B-3 @ 70"-73"      **Description:** Gray brown silty fine SAND (SM)  
**Sampled By:** TC      **Source:** Onsite

**Sampling Date:** 5/6/2016  
**Test Date:** 5/10/2016  
**Tested By:** R



Composite Sieve Data		
Standard Sieve Size	Percent Passing	Specs <sup>1</sup>
3"		
2.5"		
2"		
1.5"		
1"		
3/4"		
1/2"		
3/8"		
#4		
#8	100.0	
#16	99.8	
#30	97.7	
#50	83.5	
#100	59.5	
#200	36.4	

1 Specification

FOR MEDIATION/SETTLEMENT PURPOSES ONLY. PROTECTED BY EVIDENCE CODE SECTION 1152, 1154 & 1119 et. seq.

## Hydrometer Analysis – ASTM D422

**Project Number:** 727-1

**Project Name:** Dairy Farm Pond

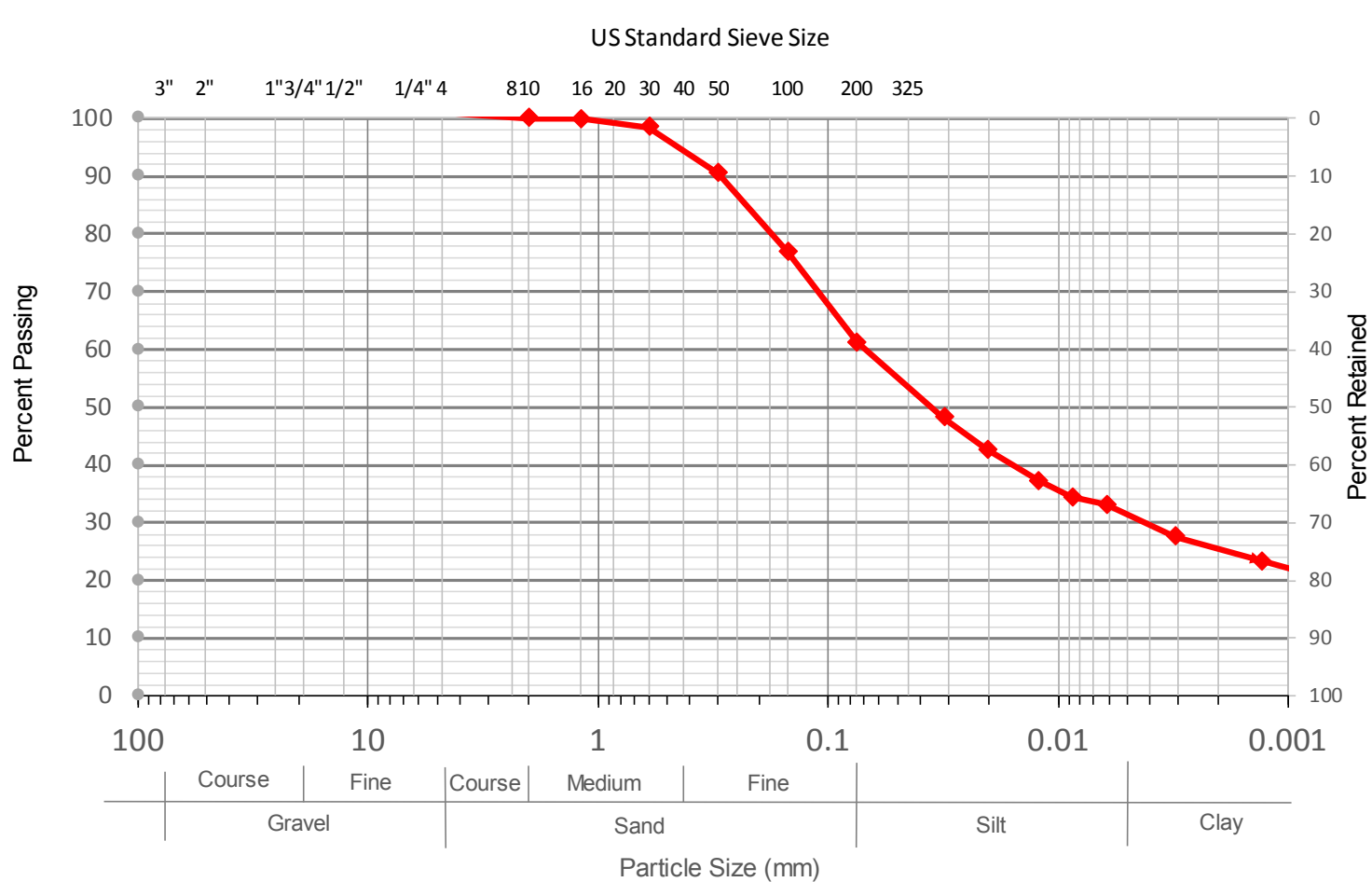
**Sample Number:** B-3

**Description:** Gray brown sandy silty CLAY (CL)

**Depth:** 94"-98"

**Test Date:** 05-11-16

**Tested By:** R



Composite Sieve Data	
Standard Sieve Size	Percent Passing
3"	
1.5"	
3/4"	
3/8"	
#4	
#10	100
#16	99.9
#30	98.5
#50	90.5
#100	77.0
#200	61.3

Particle Diameter (mm)	Percent Soil in Suspension
0.0314	48.2
0.0204	42.7
0.0122	37.2
0.0087	34.4
0.0062	33.1
0.0031	27.6
0.0013	23.4

FOR MEDIATION/SETTLEMENT PURPOSES ONLY. PROTECTED BY EVIDENCE CODE SECTION 1152, 1154 & 1119 et. seq.

Atterberg Limits Test – ASTM D4318

**Project Number:** 727-1

**Project Name:** Dairy Farm Pond

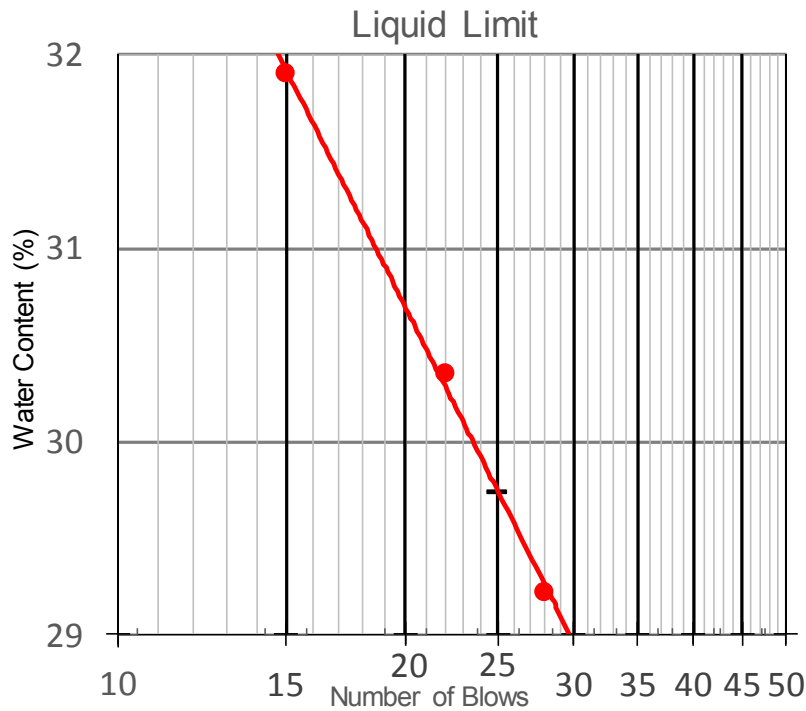
**Boring/Sample Number:** B-3

**Depth:** 94"-98"

**Date:** 05-10-16

**Description of Sample:** Gray brown sandy silty CLAY (CL)

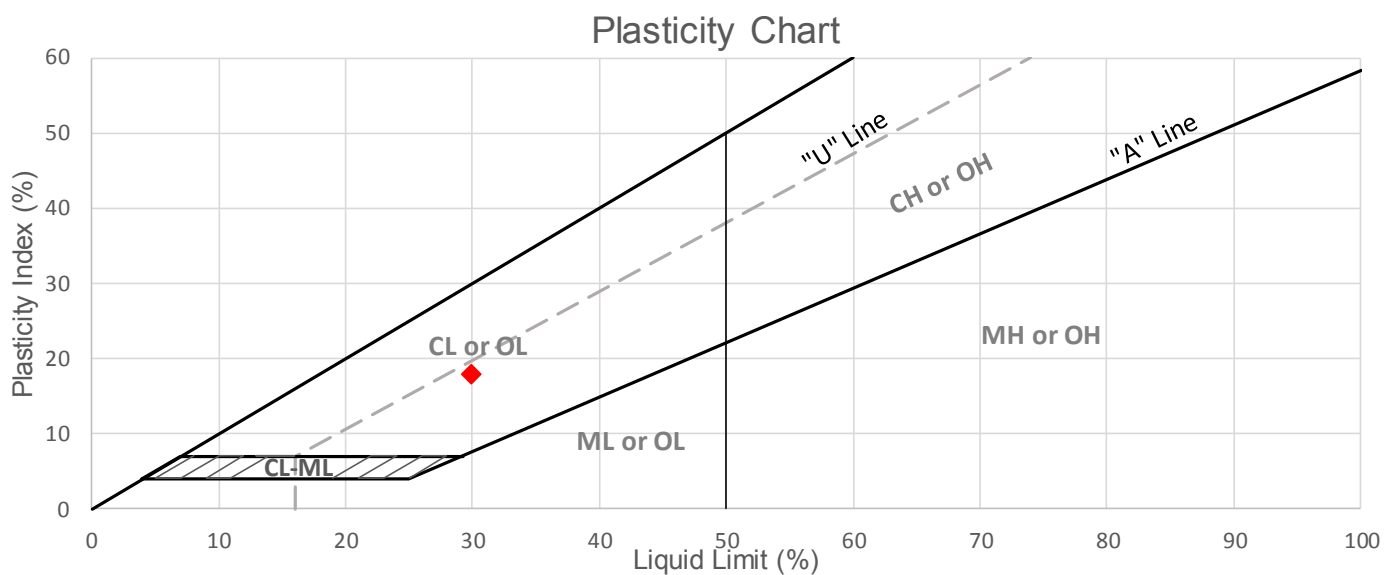
**Tested By:** R



Plastic Limit Data			
Trial	1	2	Ave
Water Content (%)	11.9	11.2	12

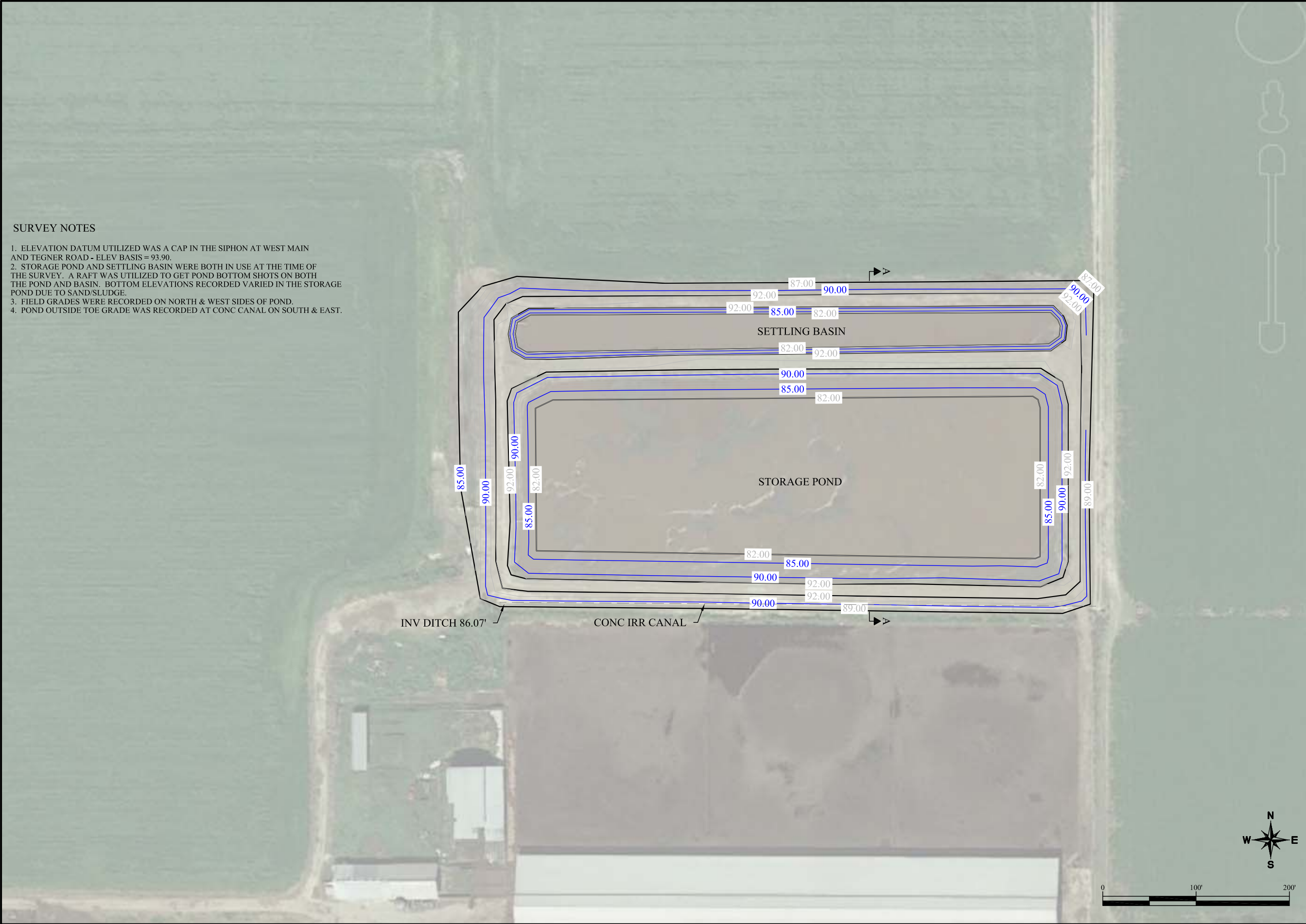
  

Data Summary	
Liquid Limit	<b>30</b>
Plastic Limit	<b>12</b>
Plasticity Index	<b>18</b>
Natural Water Content	<b>13.8</b>
Liquidity Index	<b>0.100</b>
% Passing #200	<b>61.3</b>



**APPENDIX C**  
SFB Slope Stability Analysis Results

---



- SURVEY NOTES
1. ELEVATION DATUM UTILIZED WAS A CAP IN THE SIPHON AT WEST MAIN AND TEGNER ROAD - ELEV BASIS = 93.90.
  2. STORAGE POND AND SETTLING BASIN WERE BOTH IN USE AT THE TIME OF THE SURVEY. A RAFT WAS UTILIZED TO GET POND BOTTOM SHOTS ON BOTH THE POND AND BASIN. BOTTOM ELEVATIONS RECORDED VARIED IN THE STORAGE POND DUE TO SAND/SLUDGE.
  3. FIELD GRADES WERE RECORDED ON NORTH & WEST SIDES OF POND.
  4. POND OUTSIDE TOE GRADE WAS RECORDED AT CONC CANAL ON SOUTH & EAST.



California Office

18350 E. Chabot - Turlock, CA 95380

(209) 664-1067 -- (209) 664-0161 (fax)

Idaho Office

391 S. 1st E. - Soda Springs, ID 83276

(208) 547-3722 -- (208) 547-3448 (fax)

EAC

ENGINEERING

CMC LANDHOLDINGS LLC  
4702 W. LINWOOD AVE.  
TURLOCK, CA

POND  
PLAN VIEW

PROJECT #:  
16-076

DESIGN:  
TCK

DRAWN:  
TCK

REVIEW:  
MCM

DATE:  
08/25/16

SCALE:  
1" = 100'-0"

DWG NAME:  
POND SURVEY

SHEET  
1  
OF 2 SHEETS

Table 1. Discharge Volume Calculations

	Storage	Settling
Pond Area (Top), sf	136,105	29,710
Pond Area (Mid), sf	112,414	25,686
Elev @ Top of Embankment	92.5	92.2
Elev @ High Water Mark	90.46	90.31
Elev @ Top of Canal	88.4	88.4
Area at High Water Mark, sf	126,439	28,189
Area at Top of Canal, sf	116,678	26,652
Avg Area of Discharge, sf	121,559	27,420
Volume, gallons	1,873,074	391,749
Total Volume, gallons	2,264,823	

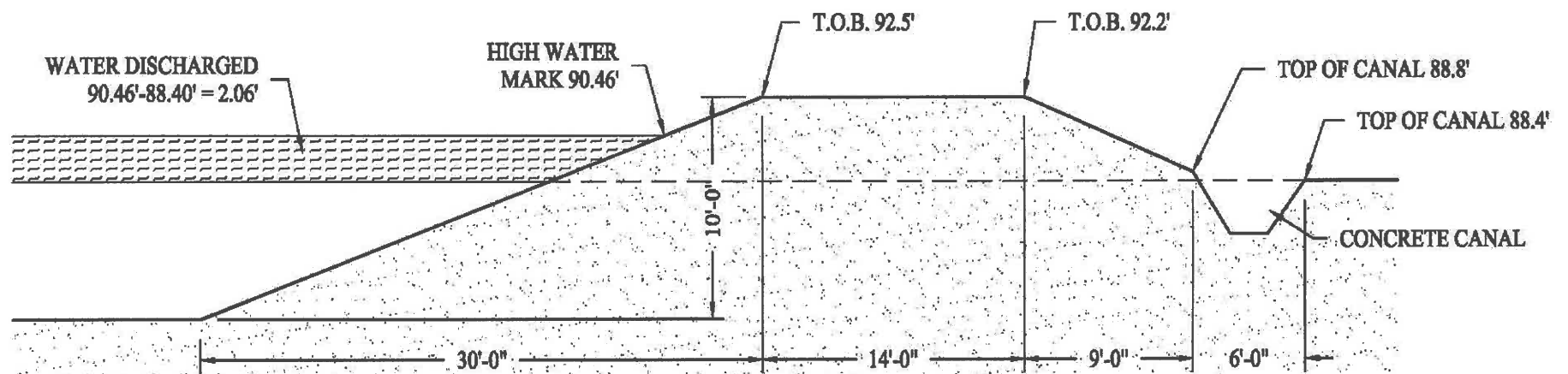


Figure 6 – Schematic Detail of discharge elevations

*EAC Engineering - Berm Survey*

Stevens, Ferrone & Bailey  
Engineering Company, Inc.

543

SOIL MECHANICS

DESIGN MANUAL 7.01  
REVALIDATED BY CHANGE 1 SEPTEMBER 1986

Naval Facilities Engineering Command  
200 Stovall Street  
Alexandria, Virginia 22322-2300

Foreword by J. Ledlie Klosky

A vulcanhammer.net reprint



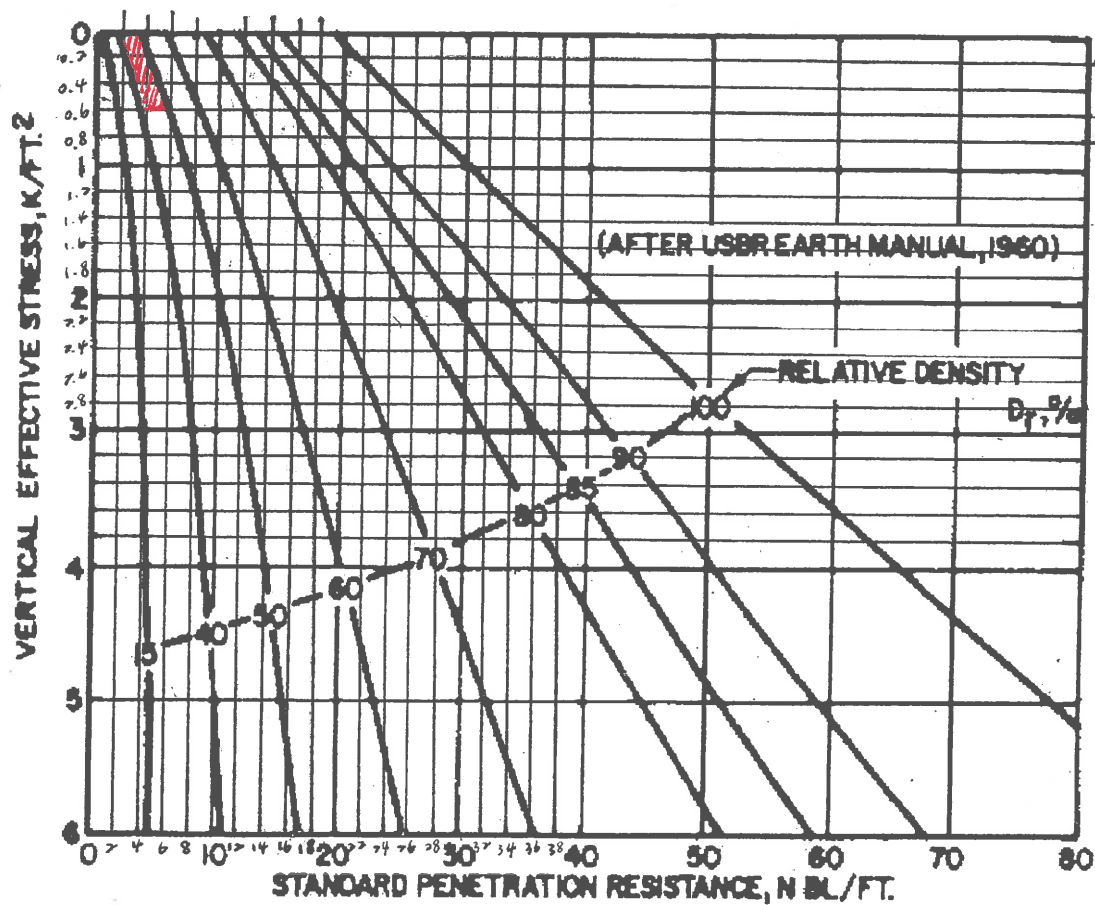


FIGURE 3  
Correlations Between Relative Density and Standard Penetration Resistance in Accordance with Gibbs and Holtz

NAVFAC DM 7.01  
Page 7.1-87

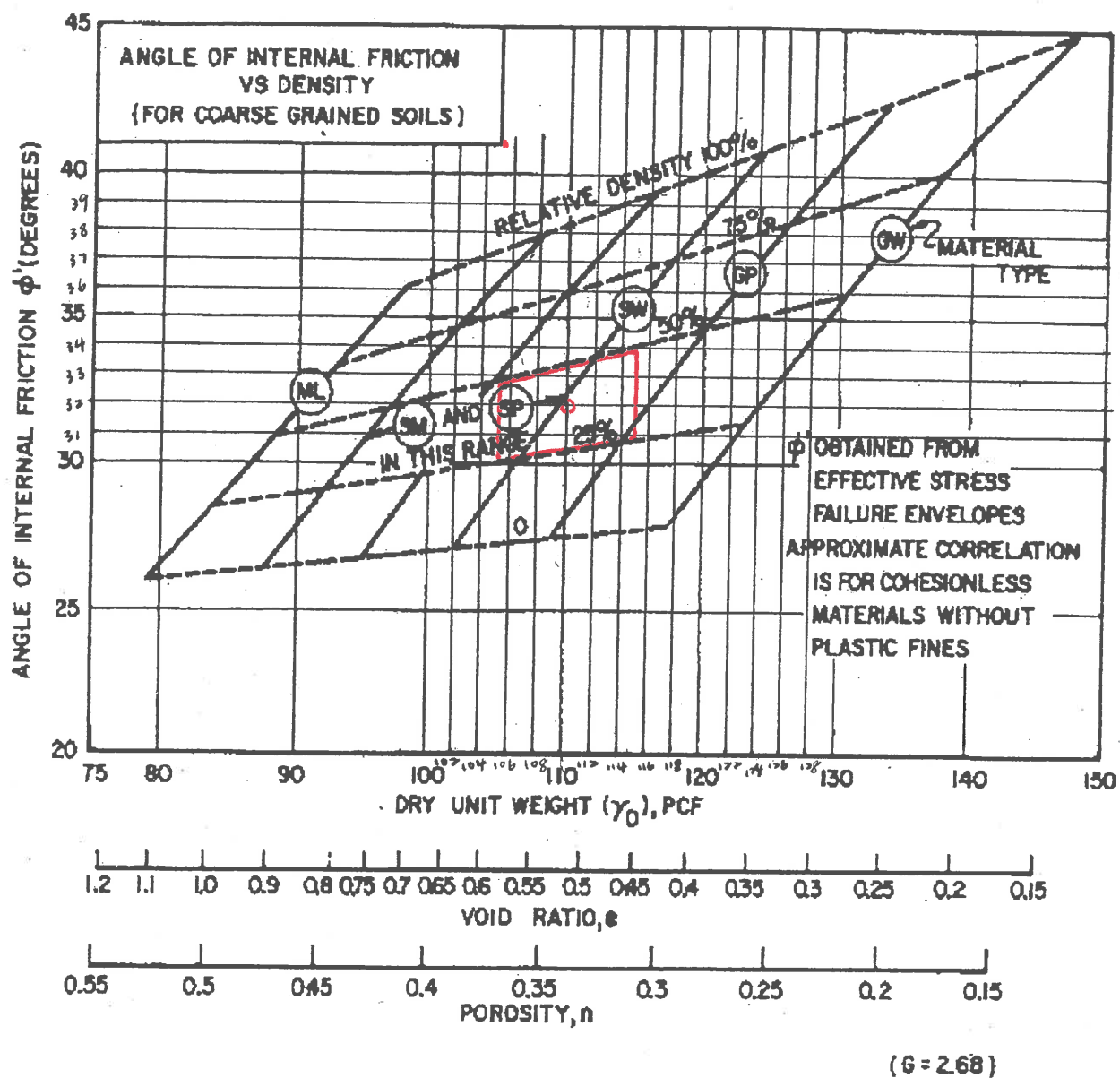


FIGURE 7  
Correlations of Strength Characteristics for Granular Soils

$C = 100 \text{ psf}$

USE  $\phi = 30^\circ$

NAVFAC DM 7.01  
Page 7.1-149

5/12/16 TC

SFB 727-1, Dairy Farm Pond, Turlock, CA  
5/13/16 TC

### Seismic Coefficient Used in Screening Analysis of Seismic Slope Stability

*Recommended by DMG Special Publication 117 Guidelines for Analyzing and Mitigating  
Landslide Hazards in California (June 2002)*

Maximum Horizontal Acceleration  
Mode Magnitude  
Mode Distance  
Threshold

<b>MHAr/g</b> =	0.28
<b>M</b> =	6.6
<b>r</b> =	25.3 km
<b>u</b> =	5 cm

Significant Duration of Shaking

**D<sub>5-95</sub>** = 12.4 sec

**C<sub>1</sub>** = 0.411

**C<sub>2</sub>** = 0.0837

**C<sub>3</sub>** = 0.00208

**ε<sub>T</sub>** = 0.437

Mean Period

**T<sub>m</sub>** = 0.51 sec

Factor of Nonlinear Response of Materials above Slide Plane

**NRF** = 1.11

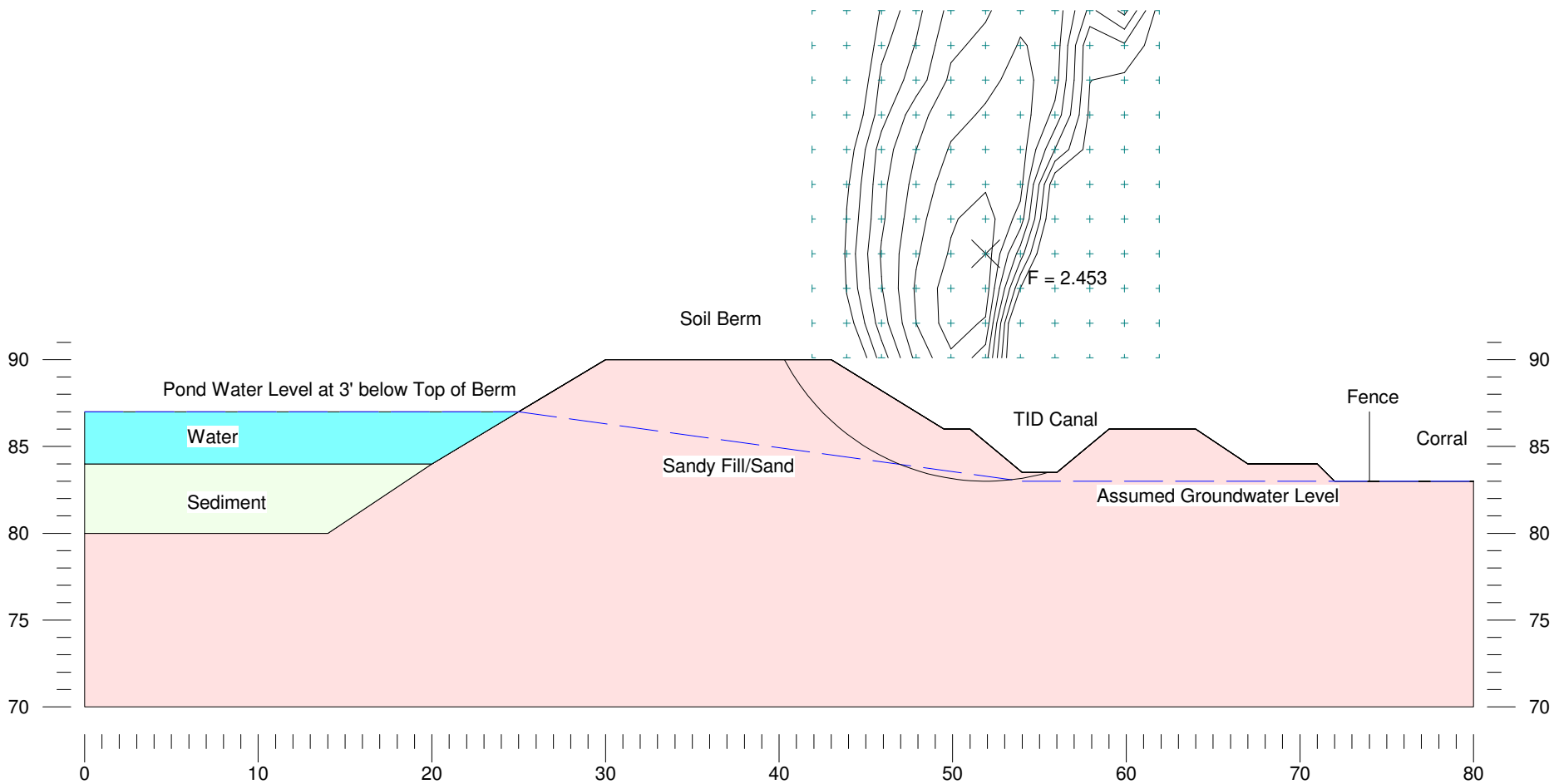
**feq** = 0.56

Seismic Coefficient

**k** = 0.16

	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

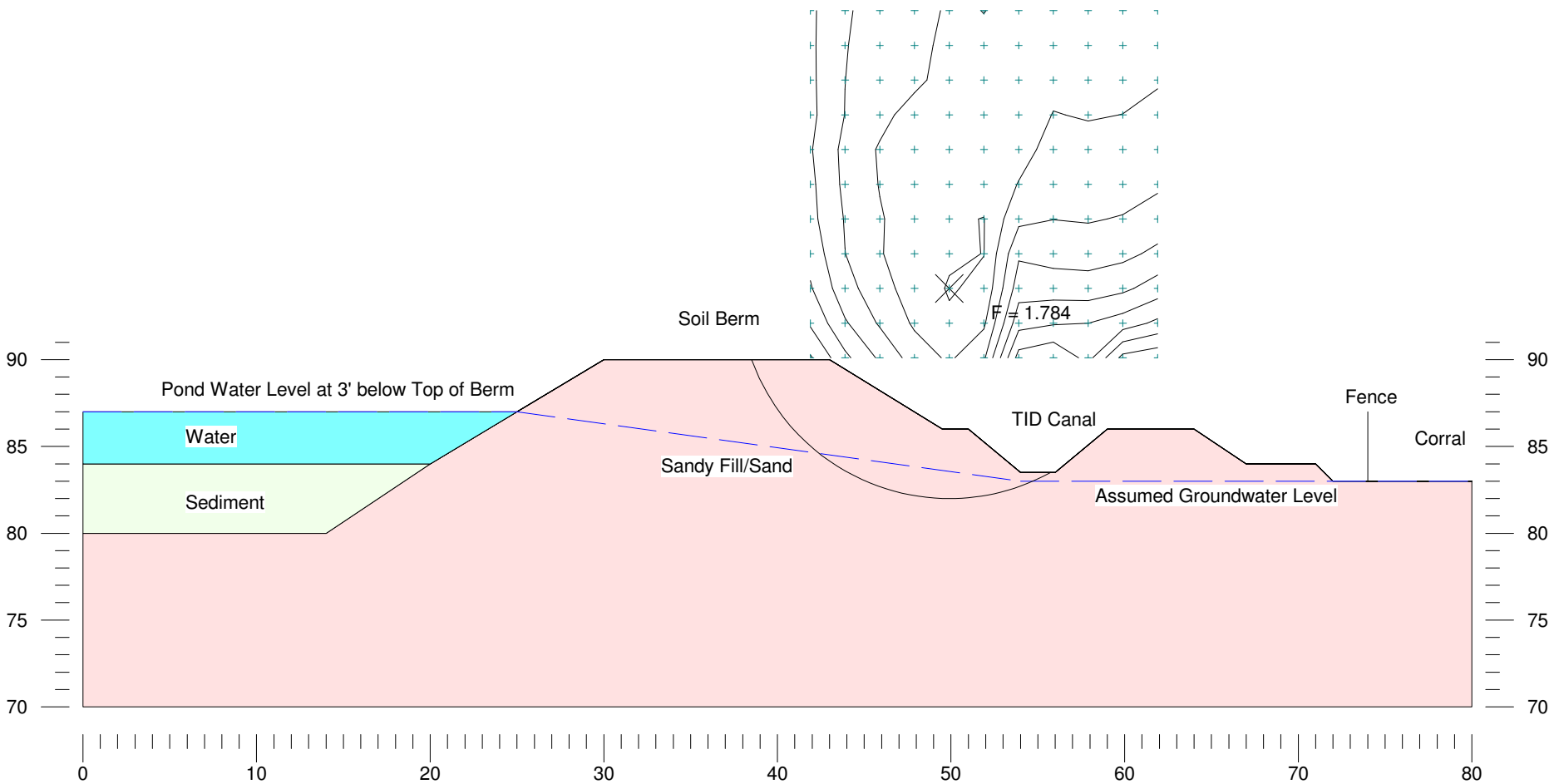
Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Static  
Case 1: Pond Water at 3' Below Top of Berm



	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

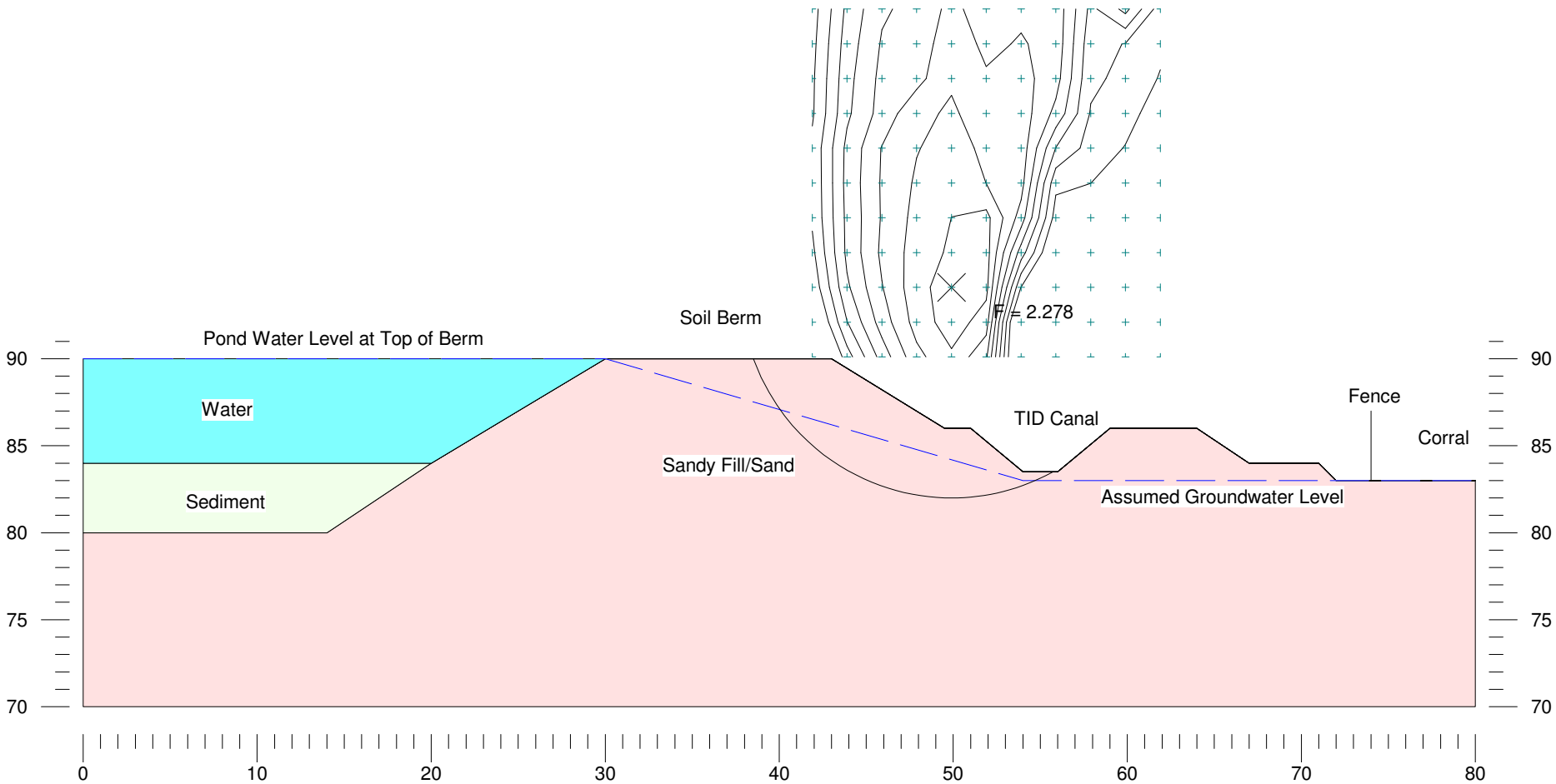
Seismic coefficient = 0.16

Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Pseudo-Static  
Case 1: Pond Water at 3' Below Top of Berm



	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Static  
Case 2: Pond Water at Top of Berm

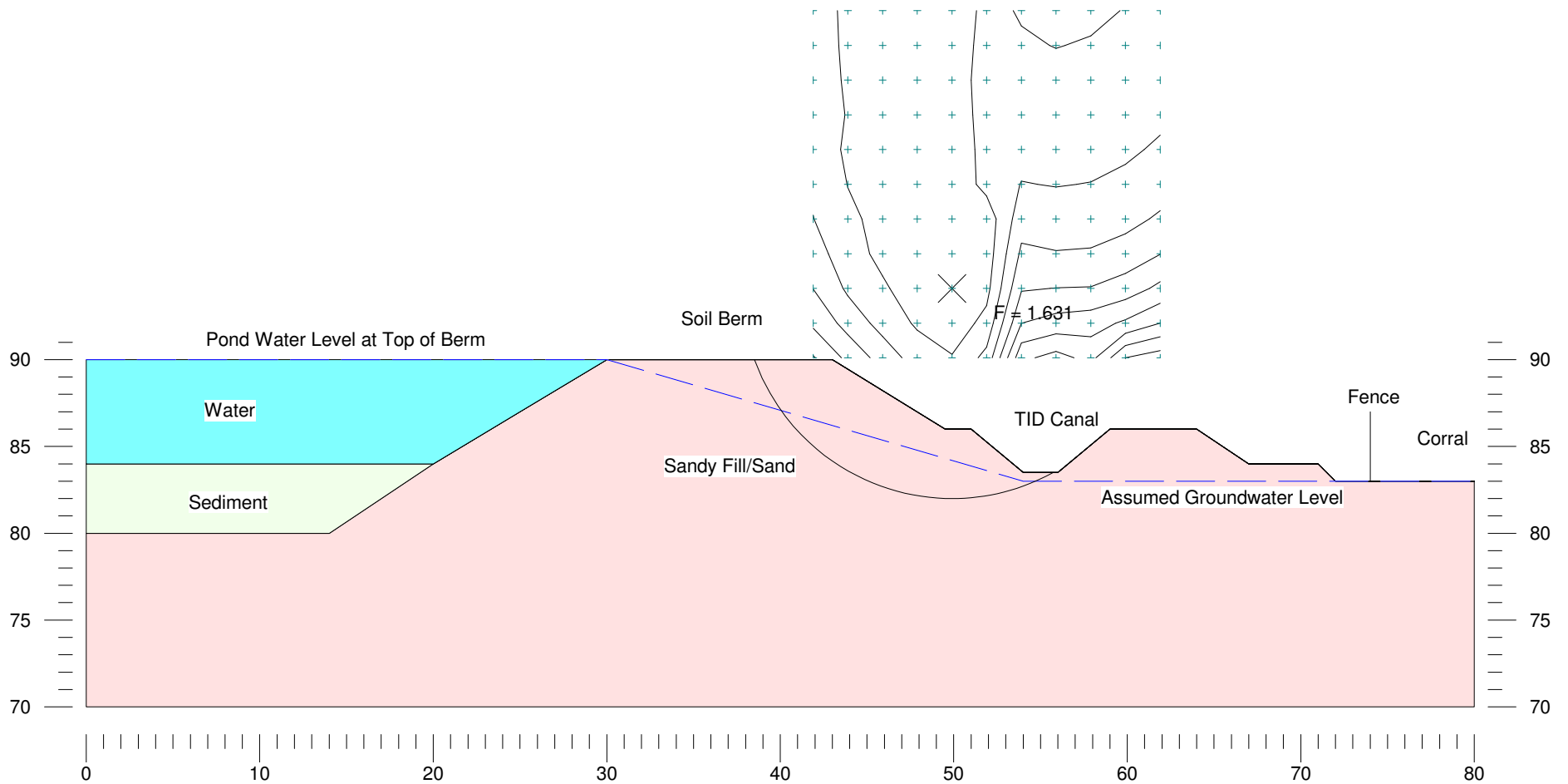


FOR MEDIATION/SETTLEMENT PURPOSES ONLY. PROTECTED BY EVIDENCE CODE SECTION 1152, 1154 & 1119 et. seq.

	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

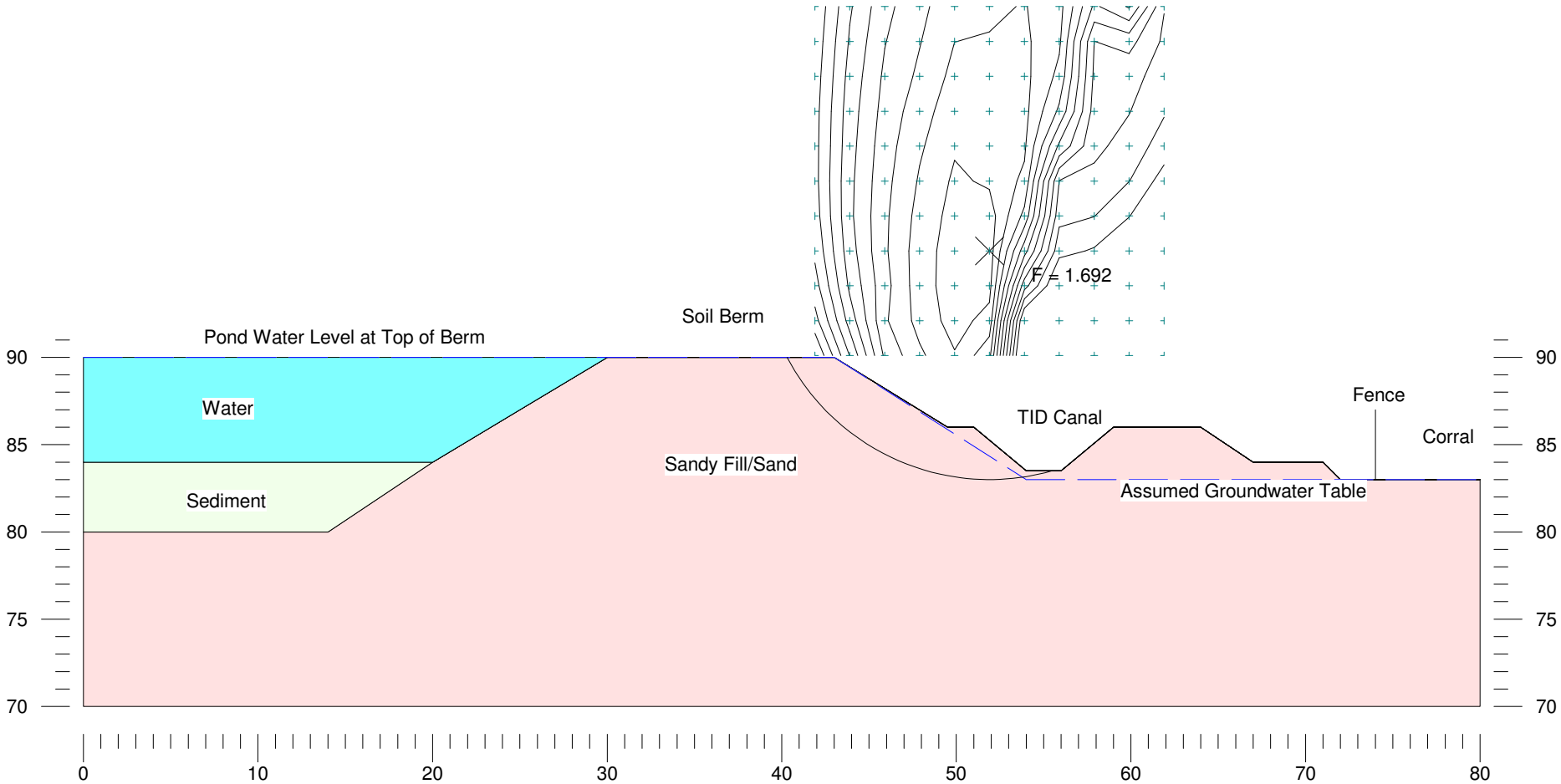
Seismic coefficient = 0.16

Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Pseudo-Static  
Case 2: Pond Water at Top of Berm



	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Static  
Case 3: Saturated Soil Berm

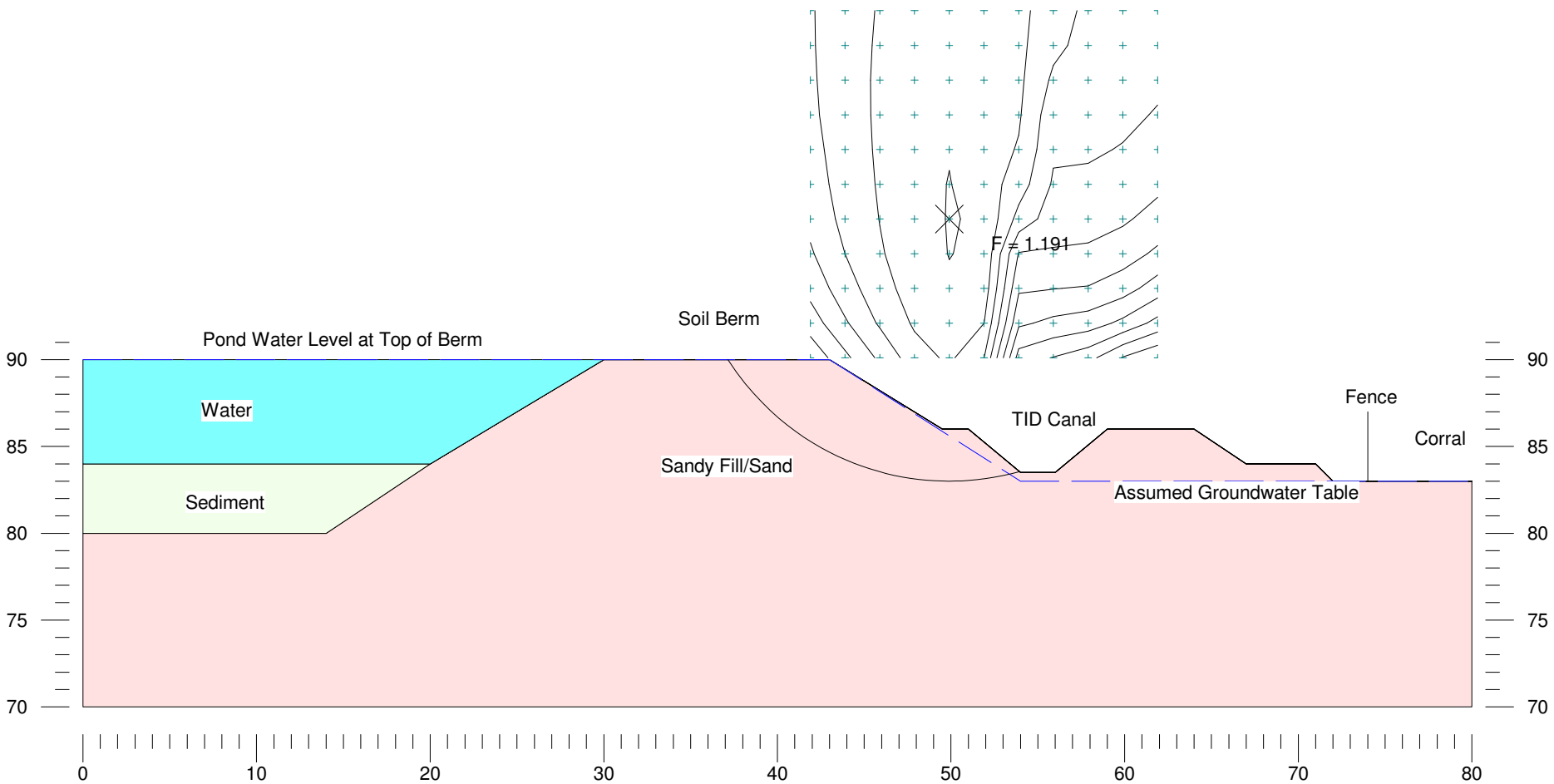




	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

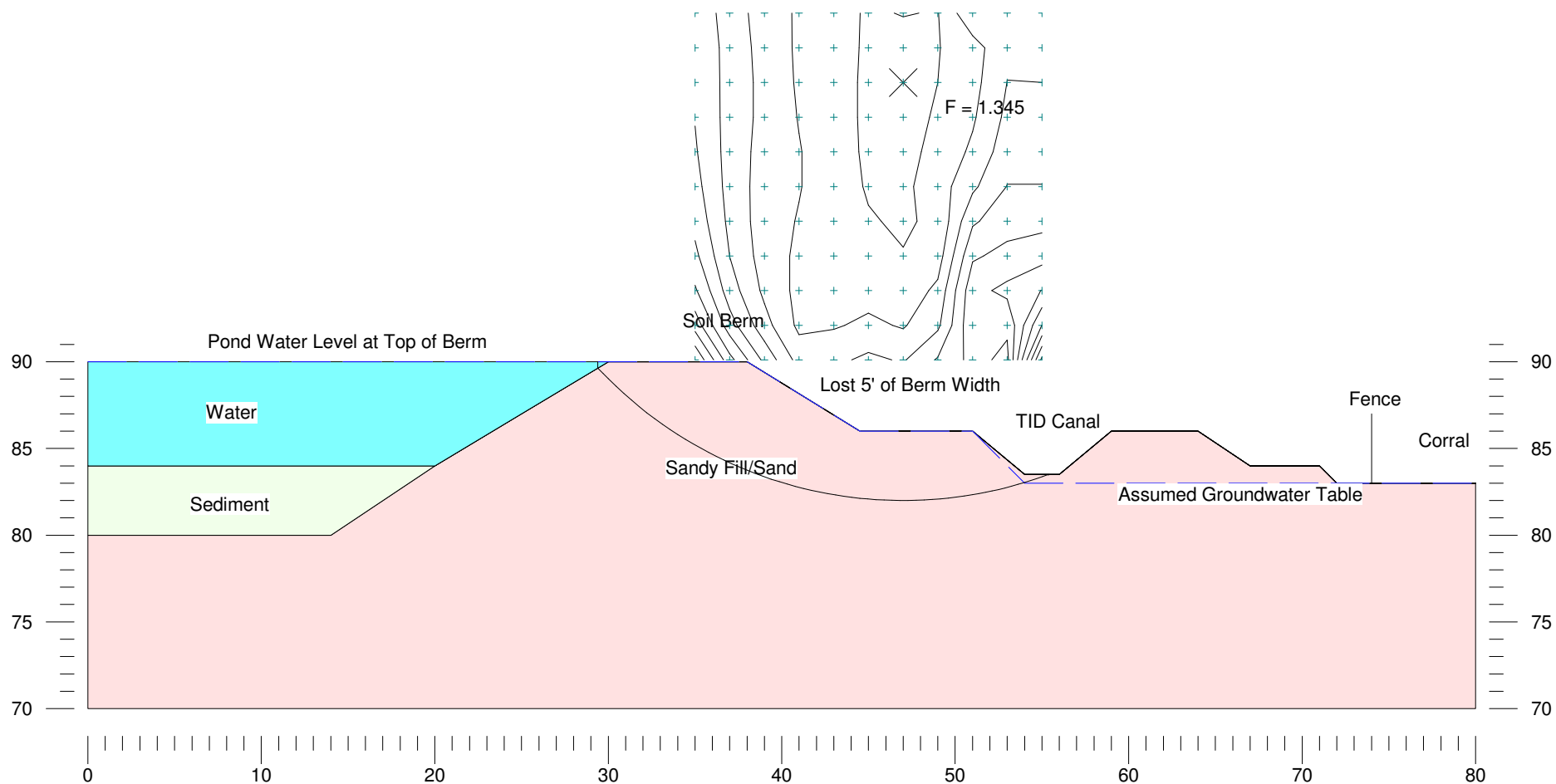
Seismic coefficient = 0.16

Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Pseudo-Static  
Case 3: Saturated Soil Berm



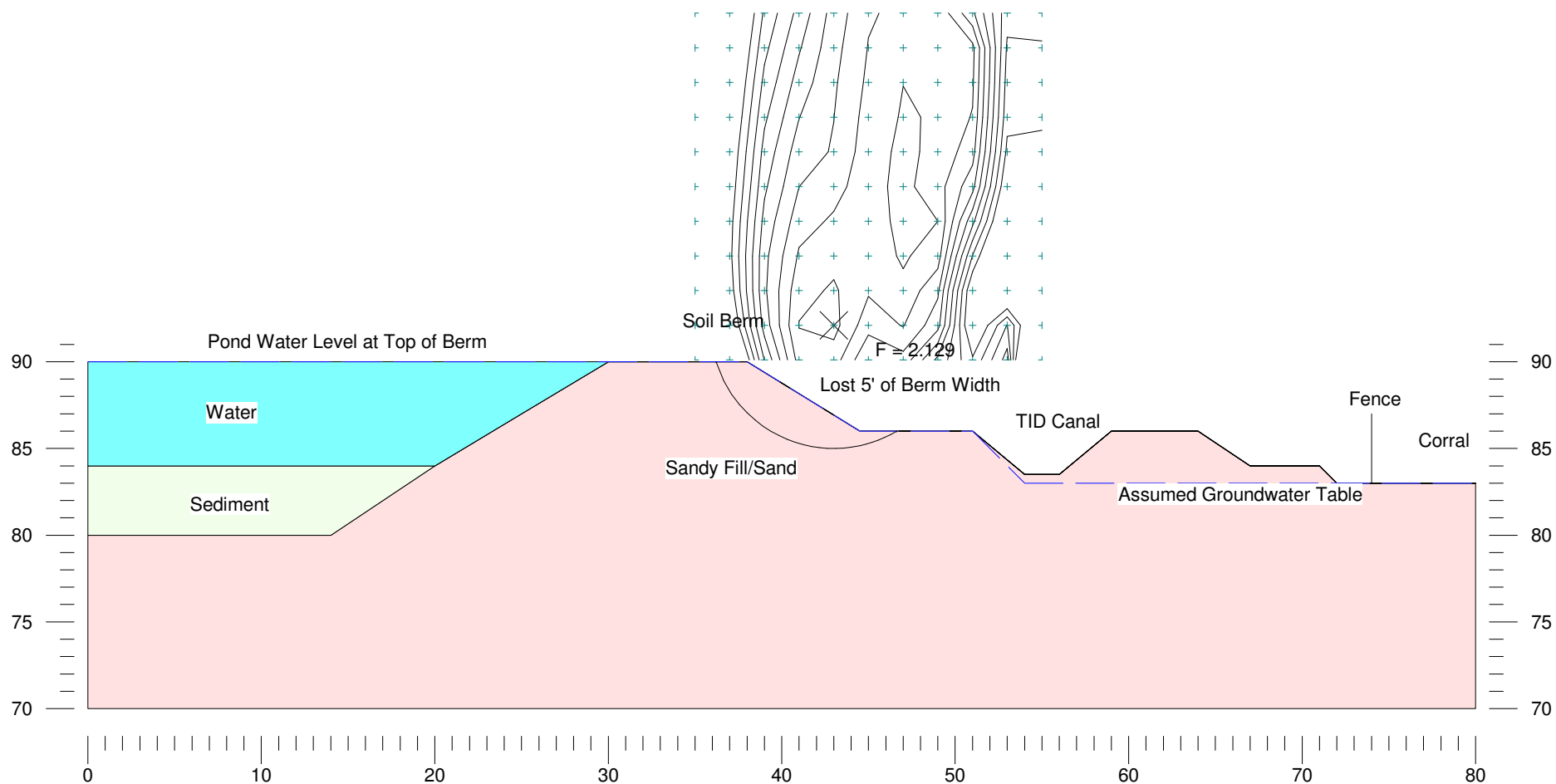
	Gamma	C	Phi	Piezo	Ru
	pcf	psf	deg	Surf.	
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0
Seismic coefficient = 0.16					

Stevens Ferrone & Bailey Engineering Co. Inc.  
 727-1  
 Dairy Farm Pond, 4207 West Linwood Ave  
 Turlock, CA  
 Pseudo-Static  
 Case 4: Animal Burrow



	Gamma pcf	C psf	Phi deg	Piezo Surf.	Ru
Water	62.4	0	0	1	0
Sediment	100	0	0	1	0
Sandy Fill/Sand	120	100	30	1	0

Stevens Ferrone & Bailey Engineering Co. Inc.  
727-1  
Dairy Farm Pond, 4207 West Linwood Ave  
Turlock, CA  
Static  
Case 4: Animal Burrow



**APPENDIX D**  
Reviewed Documents

---

## CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

## INSPECTION REPORT

**Date:** 5 April 2010

**DISCHARGER:** Nunes John # 2

**LOCATION & COUNTY:** 4207 Linwood Ave, Turlock, CA 95380

**CONTACT(S):** John Nunes Sr.- owner/operator  
John Nunes Jr.

**INSPECTION DATE:** 16 March 2010

**INSPECTED BY:** Gilberto Corral & Daniel Davis, CVRWQCB

**ACCOMPANIED BY:** Joe Ramos, Source Group Inc.

**OBSERVATIONS AND COMMENTS:**

On 16 March 2010, Central Valley Regional Water Quality Control Board staff visited the Nunes John # 2 Dairy to conduct a routine inspection of the dairy facility. Staff met with Joe Ramos, John Nunes Sr & John Nunes Jr. The dairy is permitted per Board Order No. R5-2007-0035 (General Order) for total maximum of 536 mature cows (milking & dry). It consists of 50 acres of cropland and uses Turlock Irrigation District water for crop irrigation.

Staff began the inspection by reviewing the NMP & WMP. Both were completed and signed. The NMP had been signed by Joe Ramos and the WMP by Michael Mitchell. Staff also reviewed their lab results for manure, soil, forage, domestic well data (well #3 = .654 mg/l NO<sub>3</sub>-N), irrigation application records and pond photos. Staff did not observe reporting violations at the time of the inspection.

Staff proceeded to inspect the dairy's production area and cropland. Staff inspected the domestic well and observed it had a fairly new concrete pad and the surrounding soil was graded in a manner that would prevent ponding. Staff observed that manure was piled in the corral located southeast of the dairy. In general the corrals at the dairy are not graded in a manner that would prevent standing water. Staff then inspected the lagoon and settling basin onsite and noticed that they had much less than the 2 feet of freeboard required. Staff then noticed a flow path from the settling basin to an adjacent field. The settling basin had overflowed onto the adjacent field and road, on property. John Nunes Jr explained that the timer for the flush lane had turned on but didn't turn-off automatically, thus pumping a large amount of wastewater at a rapid rate into the settling basin causing it to overflow. Staff explained to John Nunes Jr and Sr that ponding in the corrals, insufficient freeboard in the lagoon, and overflowing settling basin are violations of Board Order No. R5-2007-0035 (General Order). Staff discussed the issues with both John Nunes Sr & Jr. and they agreed that the violations could be corrected by 31 May 2010 and staff will re-inspect.



Photo of the domestic well onsite.



Photo of manure piled in a corral.



Photo of ponding in a corral.



Photo of a crater in a different corral with standing water.





Photo of the settling basin. Note it is extremely full.



Photo of the settling basin embankment where wastewater overflowed onto adjacent cropland.



Photo of process wastewater at the toe of the embankment from the overflowing settling basin.



Photo of cropland that was affected from the overflowing settling basin. Note that the crop circled in red is burnt.

FILE



# California Regional Water Quality Control Board Central Valley Region

Katherine Hart, Chair

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114

Phone (916) 464-3291 • FAX (916) 464-4645

<http://www.waterboards.ca.gov/centralvalley>



Linda S. Adams

Secretary for

Environmental Protection

Arnold  
Schwarzenegger  
Governor

## Notice of Violation(s) & Inspection Report

Date: 8-Jun-10

Certified Mail No:

7007 0710 0004 3778 2397

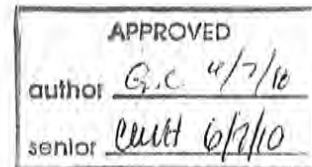
Operator(s) Name: John Nunes

Dairy Name: Nunes John # 2 Dairy

Mailing Address: 1318 South Washington Road

City, State, Zip: Turlock, CA 95380

County: Stanislaus



On 3/16/2010 your dairy at: 4207 Linwood Ave Turlock  
Gilberto Corral & Daniel Davis

was inspected by:

A copy of the Inspection Report is attached.

You are permitted to have a total of 536 mature cows per Board Order No R5-2007-0035 (General Order).

You currently have 500 mature cows, based on: 2008 Annual Report

Please Note: You are within the number of mature cows permitted under the General Order.

### I. Violations

The following violation(s) of Board Order No. R5-2007-0035 (General Order) were observed at your  
Confined Animal Facility.

No.

1 Standing Water In Animal Confinement Areas (Including Corrals) Beyond A 72 Hour Period After The Last Rainfall

2 Lagoon or Settling Basin Have Less Than The Required Freeboard

3

4

5

6

7

8

9 Other:

### II. Corrective Action(s) Required

Please take action to correct the violation(s) listed above.

(Note that the following corrective action(s) apply to the violation number listed to column at left.)

Violation  
No. Corrective Action Needed:

1-2 Correct the Violation(s), Notify Staff, Staff will re-inspect.

Other:



### III. Date for Compliance

Please correct the violation(s) listed in Section I. , above, by **30-Jun-10** . If you have not corrected the violation(s), enforcement actions may be taken. Please contact **Gilberto Corral** at **916-464-4653** when corrective actions have been completed.

**Note:**

*During this inspection, staff did not inspect agricultural or domestic wells located in the cropland. Please note that, under the General Order, manure and process wastewater shall not be applied closer than 100 feet to any agricultural or domestic well heads, unless it is shown that a physical barrier, alternative conservation practices, or field-specific conditions will provide pollutant reductions equivalent or better than the reductions achieved by the 100-foot setback. Agricultural and domestic wells in the cropland will be evaluated as part of your next inspection.*

If you have questions, please contact **Gilberto Corral** at **916-464-4653**

Enclosure: Inspection Report

cc: Glenn Sakamoto, US EPA Region 9, San Francisco, CA

# CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

## INSPECTION REPORT

APPROVED
author: <u>G.C. 5/23/11</u>
senior: <u>SMH</u>

**Date:** 5 May 2011

**DISCHARGER:** John Nunes Dairy No. 2

**LOCATION & COUNTY:** 4207 Linwood Ave, Turlock, CA 95380

**CONTACT(S):** John Nunes Sr.- owner/operator  
John Nunes Jr.

**INSPECTION DATE:** 5 May 2011

**INSPECTED BY:** Gilberto Corral & Girma Getachew, CVRWQCB

**ACCOMPANIED BY:** Joe Ramos, Source Group Inc.

### OBSERVATIONS AND COMMENTS:

On 5 May 2011, Central Valley Water Board staff conducted a compliance inspection at the John Nunes Dairy No. 2. The compliance inspection served as a follow-up to the previous compliance inspection (dated 16 March 2010), where violations of Board Order No. R5-2007-0035 (General Order) were observed and consequently a Notice of Violation was issued (dated 8 June 2010). During the 16 March 2010 inspection staff observed the following violations: (1) standing water in animal confinement areas beyond a 72 hour period after the last rainfall, (2) the onsite lagoon contained less than the required freeboard. During the 5 May 2011 inspection, staff observed both previous violations had been corrected. The lagoon had sufficient freeboard and the corrals had been scraped & graded.

Approved:



Linda S. Adams  
Acting Secretary for  
Environmental  
Protection

California Regional Water Quality Control Board  
Central Valley Region

Katherine Hart, Chair

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114  
Phone (916) 464-3291 • FAX (916) 464-4645  
<http://www.waterboards.ca.gov/centralvalley>



Edmund G Brown Jr.  
Governor

23 June 2011

FILE COPY

APPROVED	
author	G.C. 4/23/11
senior	C.M.H. 6/23/11

John Nunes  
John Nunes Dairy No. 2  
1318 South Washington Road  
Turlock, CA 95380

**COMPLIANCE INSPECTION, JOHN NUNES DAIRY NO. 2, 4207 LINWOOD AVE,  
TURLOCK, STANISLAUS COUNTY**

On 5 May 2011, Central Valley Regional Water Quality Control Board staff conducted a compliance inspection at the John Nunes Dairy No. 2. The compliance inspection served as a follow-up to a Notice of Violations previously issued on 8 June 2010 for violations of Board Order No. R5-2007-0035 (General Order). During the 5 May 2011 compliance inspection (see inspection report dated 5 May 2011), staff no longer observed violations of the General Order to exist at the dairy facility. The 8 June 2010 Notice of Violation, that was issued to the John Nunes Dairy No. 2 has been satisfied.

If you have questions regarding this letter, please call me at (916) 464-4653 or at [gcorral@waterboards.ca.gov](mailto:gcorral@waterboards.ca.gov).

Gilberto Corral  
Water Resources Control Engineer  
Confined Animal Facility Regulatory Unit

**CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD**

**INSPECTION REPORT**

**DATE:** 21 May 2014

**LOCATION & COUNTY:** John Nunes Dairy #2, 4207 Linwood Rd., Turlock, Stanislaus County

**CONTACTS:** John Nunes (209 534 0847)

**INSPECTION DATE:** 20 May 2014

**INSPECTED BY:** Girma Getachew, CVRWQCB

**ACCOMPANIED BY:** Jennifer Haynes, CVRWQCB  
Kristen Jones (F & R Ag Services Inc.)

**OBSERVATIONS AND COMMENTS:**

Regional Water Quality Control Board staff inspected the dairy site on 20 May 2014. The dairy houses 500 mature milk cows (450 milking and 50 dry) and farms 53 acres of cropland for forage production. All the required documents related to animal waste production and management were in the file at the dairy. There was excess manure in the corrals. Corrals on the south side (along the road) do not have a drainage system to direct corral runoff into the storage lagoon.

The storage lagoon and settling basin had over two ft. of freeboard at the time of inspection. The manure stacking area located on the northwest corner of the settling basin does not have a drainage system to direct runoff into the storage lagoon. The berm had holes that may jeopardize the integrity of the lagoon.

The 2012 Annual Report indicated that the dairy generated solid manure equivalent to 110,630 lbs. of nitrogen and exported 19,306 lbs. of N (17% of the nitrogen generated at the site).

**SUMMARY AND CONCLUSION:**

The corrals should be graded and sloped to divert corral runoff into the storage lagoon. The manure storage area should have a drainage system to direct runoff into the storage lagoon. The wastewater storage lagoon should be maintained free from holes and animal burrows.



John Nunes Dairy #2  
4207 Linwood Rd., Turlock



Phone 1: South side corral



Phone 2: South side corral



Phone 3: North side corral



Phone 4: Storage lagoon

John Nunes Dairy #2  
4207 Linwood Rd., Turlock



Phone 5: Storage lagoon (east to west view)



Phone 6: Holes on the berm of storage lagoon



Phone 7: Holes on the berm of storage lagoon



Phone 8: Settling basin





Phone 9: Manure storage area (east to west view)



Phone 10: Manure stacking area (west north corner)



Phone 11: Manure storage area (west north corner)



Phone 12: North side corral with sign of corral ponding

# CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

## INSPECTION REPORT

**DATE:** 23 November 2015

**DAIRY & LOCATION:** CMC Land Holdings LLC, 4207 W Linwood Avenue, Turlock, Stanislaus County

**CONTACTS:** Mike Borba (209 541 7001)

**INSPECTION DATE:** 20 November 2015

**INSPECTED BY:** Girma Getachew & Gilberto Corral, CVRWQCB

**ACCOMPANIED BY:** Mike Borba (owner)  
Joe Ramos, F & R Ag Services, Inc.  
Scott Cole (TID, Water Operations Manager)  
Adam Cahn (Department of Fish and Wildlife)

Others personnel and Agencies present:  
Lucien Musso Stanislaus County, Hazardous Materials Division  
Ali Arshad, Stanislaus County, Hazardous Materials Division  
Wallace Low, Stanislaus County, Environmental Health  
Rachel Reiss, Stanislaus County, Environmental Health

### OBSERVATIONS AND COMMENTS:

On 20 November 2015, Regional Water Quality Control Board staff received a Hazardous Materials Spill Report from the Governor's Office of Emergency Services stating that a levee of a dairy located near 4207 W Linwood Avenue in Turlock broke in the morning of 20 November 2015 for unknown reasons.

Upon arrival, staff noted that the wastewater lagoon located in the CMC Land Holding facility at 4207 Linwood Avenue released wastewater via a broken berm on the south side of the lagoon. The wastewater then went into the corrals and into the residential areas across W Linwood Avenue.

Dairy: Milking at the facility ceased in June 2014, the facility currently houses about 400 large heifers. About 53 acres of cropland is associated with the facility.

Wastewater Ponds: - The facility has two wastewater ponds (one settling basin on the north side and a larger wastewater lagoon on the south side). Staff noted the breached berm on the south side of the lagoon was being repaired. When staff arrived, the flow of wastewater from the lagoon had been stopped. According to Mike Borba (owner), the weir box that conveys wastewater from the settling basin to the storage lagoon was clogged and prevented the wastewater movement from the settling basin to the storage lagoon. To facilitate the wastewater



conveyance, the berm between the storage lagoon and settling basin was cut (opened) 3 to 4 ft. wide. This may have resulted in a large amount of wastewater flow into the storage lagoon, resulting in an observed 2 to 3 ft. drop in this wastewater level in the settling basin. The wastewater lagoon did not have the required two ft. of freeboard based on the observed water marks in the lagoon. In the Waste Management Plan, the existing and required storage capacities were calculated to be 7.9 and 4.2 million gallons respectively. Lack of freeboard in the lagoon was an indication that the Waste Management Plan was not properly implemented. The discharge caused about a 4 to 5 ft. drop in the wastewater level in the storage lagoon (visual assessment of the water marks on the inner berm). It was estimated that about 3.7 million gallons of wastewater was discharged.

Corrals: - The corrals on the north and south sides of the animal housing were flooded with wastewater. The excessive flow of wastewater into the south corral forced wastewater into the residential areas across W Linwood Avenue. The corrals were not graded and as a result extensive water ponding was noted.

Cropland: - the cropland on the west side of the storage lagoon was flooded with wastewater. There was no crop at the time of the flooding.

Residential areas: The front and back yards of a number of houses, including the areas around domestic wells, were flooded with wastewater. Well-water samples were collected from two homes (4030 and 4406 W Linwood Avenue).

Turlock irrigation canals and laterals: - Wastewater from the storage lagoon entered the canal located on the south side of the lagoon. The canal conveys water into the Harding Drain located about 3 miles from discharge area. The Turlock Irrigation District was notified of the lagoon breach on 20 November at about 5:00 to 5:30 AM by the residents impacted by the wastewater. According to Scott Cole from TID (Turlock Irrigation District), TID closed the valve at Drop 32 on the Harding Drain before wastewater reached the Drain, and redirected the wastewater to nearby farmers to irrigate their cropland. By so doing TID mitigated the wastewater reaching Harding Drain. However there was wastewater in Harding Drain that was leaked due to a malfunctioning valve. Staff collected samples from the lagoon, TID canals, and two domestic wells.

Mike Borba (one of the owners of the property) was first notified by TID about the breach on 20 November at about 7:12 AM. He indicated that the breach may have been caused by gopher holes or an old pipe on the south side of the storage lagoon.

The CMC Land Holdings facility violated the following prohibitions and specifications in the Re-issued Dairy General Order:

1. Not implementing waste and nutrient management plans
2. The collection, treatment, storage discharge or disposal of wastes at an existing milk cow dairy shall not result in the creation of a condition of pollution or nuisance (Prohibition A4)
3. The land application of manure or process wastewater to cropland for other than nutrient recycling is prohibited (Prohibition A9)
4. The direct discharge of wastewater into groundwater prohibited (Prohibition A14)
5. The level of waste in the process wastewater retention (ponds) shall be kept a minimum of two feet from the top of each aboveground embankment (Pond Specification C1)
6. Ponds designated to contain the 25-year, 24-hour storm event runoff must have a depth marker that clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation from 25-year, 24-hour storm event (Pond Specification C3).
7. All dirt or unpaved corrals shall be graded to promote drainage (Production Area Specification D1)

#### **SUMMARY AND CONCLUSION:**

About 3.7 million gallons of wastewater were discharged from the storage lagoon (based on the observed 4 to 5 ft. drop in the liquid level in the storage lagoon and the 2 to 3 ft. drop in the settling basin). In addition to corral ponding, the discharge impacted residential areas and TID waterways, including some amount which went into the Harding Drain. The corrals were not graded, resulting in extensive wastewater ponding. The Waste Management Plan and Nutrient Management Plan were not implemented appropriately. The Production Areas, including wastewater storage ponds, were not managed according the requirements outlined in the Re-issued Dairy General Order.



Photo 1: North side of west corral



Photo 2: Wastewater ponding on south side of Linwood Avenue (east to west view)



Photo 3: Wastewater ponding in west side corral



Photo 4: Wastewater ponding along Linwood Avenue (west to east view)



Photo 5: Wastewater ponding in south side corral



Photo 6: Wastewater being pumped in south side corral; wastewater being pumped back from residential areas in to corrals and then to pond



Photo 7: Wastewater being pumped from residential areas to corral (west to east view)



Photo 8 Wastewater being pumped from residential areas to corral





Photo 9: Wastewater being pumped from residential areas to corral



Photo 10: Wastewater being pumped from residential areas to corral



Photo 11: Wastewater directed to cropland



Photo 12: Wastewater in TID canal (south side of the lagoon; west to east view)



Photo 13: South side lagoon dropped 4 to 5 ft. due to the discharge



Photo 14: Wastewater from corrals being pumped back to lagoon



Photo 15: North side lagoon dropped 2-3 ft. due to the discharge



Photo 16: Wastewater from settling basin directed into lagoon by cutting the berm between them





Photo 17 The broken berm of the lagoon being repaired



Photo 18: Lagoon berm with holes:



Photo 19: TID canal south of the lagoon (east to west view)



Photo 20: TID canal east of the lagoon (west to east view)





Photo 21: Wastewater ponding in south side corral and on road side (east to west view)



Photo 22: Wastewater being pumped from residential area into the corrals



Photo 23: Wastewater reached groundwater well location



Photo 24: Wastewater reached wells in residential area





Photo 25: Wastewater in Harding Drain



Photo 26: Wastewater leaked into Harding Drain



Photo 27: Wastewater in Harding Drain; the leaking area was being closed



Photo 28: Wastewater in Harding Drain: attempt to pump wastewater from the drain

## Central Valley Regional Water Quality Control Board

15 January 2016

CMC Land Holdings LLC  
c/o. George P. Rodarakis, Esq.  
Rodarakis & Sousa  
1301 L Street, Suite 4  
Modesto, CA 95354

**Certified Mail No.**  
**7012 0470 0000 9904 3611**

**CALIFORNIA WATER CODE SECTION 13267 ORDER – DIRECTIVES FOR SUBMITTING DOCUMENTATION PERTAINING WASTEWATER DISCHARGE ON 20 NOVEMBER 2015 AND MITIGATION MEASURES AT CMC LANDHOLDINGS LLC, 4207 W LINWOOD AVENUE, TURLOCK, STANISLAUS COUNTY**

**You are legally obligated to respond to this Order. Please read this Order carefully.**

On 20 November 2015 Regional Water Quality Control Board staff received a Hazardous Material Spill Report from the Governor's Office of Emergency Services stating that a levee of a dairy lagoon located near 4207 W Linwood Avenue in Turlock broke in the morning of 20 November 2015 for unknown reasons.

Staff visited the site on the same day and assessed the discharge of wastewater into the dairy facility, nearby cropland, residential areas, and Turlock Irrigation District canals (see the attached Inspection Report).

Priority Reporting of Significant Events: - In the Priority Reporting of Significant Events submitted to our office on 25 November 2015, you indicated that the total volume of wastewater discharged from the lagoon was between 2.5 and 3 million gallons. The discharge was attributed to a rodent hole adjacent to a 4 inch in-ground pipe that allowed wastewater to seep through the bank creating a breach in the south wall of the storage lagoon.

As shown in the table below, the wastewater and domestic well samples taken from the residential areas south of W Linwood Avenue indicated that the groundwater from many wells contains nitrate-nitrogen in excess of the Maximum Contaminant Limit (MCL) of 10 mg/L. Some wells also tested positive for bacteria.

Date Sampled	Sample source	Address	Depth to Water (ft.)	NH <sub>4</sub> -N	P	K	NO <sub>3</sub> -N	soluble salts (ppm)	EC µmhos/cm	TDS (mg/L)	TKN	E.coli	total coliform
				(mg/L)						(mg/L)		a/p	
11/20/15	Lagoon discharge	4408 W Linwood		110	64.8	733		3890	6080	4050	215		
11/20/15	Lagoon discharge	4030 W Linwood		121	84.3	923		4250	6640	5660	279		
11/20/15	Domestic well	4406 W Linwood		ND							ND	absent	absent
11/24/15	Domestic well	4030 W Linwood		ND							1.5	present	Present
11/20/15	Domestic well	4030 W Linwood		ND							2	present	Present
12/4/15	Dairy well	4207 W Linwood	43.35				1.39			131		absent	absent
12/4/15	Domestic well	4530 W Linwood	Unable to access				14.5			707		absent	absent
12/4/15	Domestic well	4406 W Linwood	14.35				14.4			903		absent	absent
12/4/15	Domestic well	4318 W Linwood	Unable to access				22			1300		absent	absent
12/4/15	Domestic well	4200 W Linwood	Unable to access				19.3			2370		absent	absent
12/4/15	Domestic well	4030 W Linwood	13.71				24.6			756		absent	present
12/8/15	Domestic well	1624 S Washington	16.54				22.6			894		absent	present
12/8/15	Domestic well	1600 S Washington	Unable to access				4.25			302		absent	absent
12/8/15	Domestic well	4600 W Linwood	Unable to access				12.6			592		absent	absent
12/8/15	Domestic well	4500 W Linwood	Unable to access				0.84			124		absent	present
12/8/15	Domestic well	4230 W Linwood	Unable to access				14.2			825		absent	present

a/p, absent (a) or present (p); EC, Specific conductance; NH<sub>4</sub>-N, ammonia nitrogen; ND, not detectable; NO<sub>3</sub>-N, nitrate nitrogen; TDS, total dissolved solids; TKN, total Kjeldahl nitrogen

The Executive Officer of the Central Valley Water Board hereby finds that:

1. CMC Land Holdings LLC (the Dairy), located at 4207 W Linwood Avenue in Turlock, is regulated under the Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies, Order R5-2013-0122 (General Order). Coverage under the General Order requires an owner and/or operator to comply with all conditions of the Order, including maintaining and submitting technical and monitoring reports.
2. The Nutrient and Waste Management Plans were not implemented according to the directives outlined in the General Order.
3. The collection, treatment, storage discharge or disposal of wastes at the facility does not meet the conditions outlined in the General Order which resulted in the creation of a condition of pollution or nuisance.
4. Application of manure or process wastewater to cropland for other than nutrient recycling is a violation of the General Order.
5. The direct discharge of wastewater into groundwater is violation of the General Order.

6. The level of wastewater in the process wastewater retention (ponds) was not maintained at a minimum of two feet from the top of each aboveground embankment.
7. The ponds did not have the capacity necessary to contain the runoff from the production area and direct precipitation from 25-year, 24-hour storm event.
8. The corrals were not graded to promote drainage.

This Order instructs you to submit specific documents pertaining to operation of the dairy and farming of the associated cropland, as listed below:

1. Submit a report, prepared by a licensed Civil Engineer, evaluating the structural integrity of the wastewater lagoon and settling basin. The report shall include a determination of maximum of depth of the lagoon and settling basin and the vertical distance between the land surface and the top of the lagoon and settling basin embankments.
2. Submit results of any additional sampling of the wells listed in your 8 December 2015 letter to Andrew Altevogt that has been conducted since 8 December 2015. In addition, the wells should be sampled for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride), and should be sampled biweekly for nitrate-nitrogen, total dissolved solids, E. coli, and total coliform.
3. Submit well driller's logs for the wells listed in your 8 December 2015 letter to Andrew Altevogt.
4. Submit copies of the Visual Inspection reports for the wastewater pond and settling basin for the 2015 calendar year.
5. Provide application information (field location, field name or identifier, ownership, crop type, and volume applied) for released wastewater that was applied to cropland upon removal from the Turlock Irrigation District canal system. Provide the total volume of wastewater applied to cropland.
6. Calculate and submit to the Board the volume of released wastewater that was returned to the pond and settling basin at 4207 W Linwood.
7. If you intend to close the dairy, submit a closure plan that includes a timeline for the completion of closure.
8. If you intend to continue to house animals of any type at 4207 W Linwood, submit:
  - A. A corral grading plan that promotes drainage into the pond/settling basin and prevents water ponding in the corrals;
  - B. An Operation and Maintenance Plan for the pond and settling basin that includes berm maintenance actions, freeboard monitoring, and installation of depth markers;
  - C. A revised Waste Management Plan that demonstrates that the facility has the required storage capacity.

Reports A-C shall be prepared by appropriately licensed professionals as required in the General Order.



Clean Water Act section 13268 states, in relevant part, that

*(a)(1) Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267 ... is guilty of a misdemeanor, and may be liable civilly in accordance with subdivision (b)....*

*(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.*

Failure to submit the required reports to the Central Valley Water Board may result in enforcement action being taken against CMC Land Holdings LLC, which may include imposition of administrative civil liability pursuant to CWC section 13268, or referral to the Attorney General's Office for injunctive relief or the imposition of civil liability. Pursuant to CWC section 13268, the Central Valley Water Board may impose administrative civil liability of up to \$1,000 per day for each day that the report required herein is not submitted to the Central Valley Water Board. *hc*

**IT IS HEREBY ORDERED** that, pursuant to California Water Code section 13267, CMC Land Holding shall, by **5 February 2016**, submit the information listed in item #5 (above) and by **15 February 2016**, submit the remaining information listed above to the Central Valley Water Board. All of the requested information should be based on the facility's current operations.



Andrew Altevogt, PhD, PE  
Assistant Executive Officer

Enclosure:  
Inspection report



# California Regional Water Quality Control Board

## Central Valley Region

Robert Schneider, Chair



Winston H. Hickox  
Secretary for  
Environmental  
Protection

Sacramento Main Office  
Internet Address: <http://www.swrcb.ca.gov/~rwqcb5>  
3443 Routier Road, Suite A, Sacramento, California 95827-3003  
Phone (916) 255-3000 • FAX (916) 255-3015

Gray Davis  
Governor

11 May 2001

Western United Dairyman  
Mr. Joe Ramos  
1315 K Street  
Modesto, CA 95350

### REVIEW OF SOIL ASSESSMENT FOR THE EXPANSION OF A DAIRY WASTEPOND AND SETTLING BASIN AT THE JOHN NUNES DAIRY #2, 4207 LINWOOD AVENUE, TURLOCK, STANISLAUS COUNTY

I have reviewed the soil assessment report that you submitted to our office on 26 June 2000 for the John Nunes Dairy #2. Soil samples were collected at a depth between six inches and one foot in the areas for the pond extension and settling basin. The wastepond extension is reported to be 132 by 625 feet with a total depth of 10 feet. The pond was cut 4 feet below grade. The settling basin is reported to be 95 by 625 feet with a depth of 10 feet. The settling basin was also cut 4 feet below grade. The depth to groundwater in the area was not reported; therefore, the separation between the bottom of the pond and settling basin in relation to groundwater depth in the area cannot be determined.

Testing of the soils at the wastepond extension & settling basin by A & L Western Agricultural Laboratories in Modesto reports that the soils meet current state requirements (reference the California Code of Regulations, Subdivision 1, Chapter 7, Subchapter 2). Five (5) samples were collected and analyzed from the wastepond extension. The clay percentages in the samples are reported to vary from 14 to 22% with a United States Department of Agriculture (USDA) soil classification of loam and sandy loam. Seven (7) samples were collected and analyzed from the settling basin. The clay percentages in the samples are reported to vary from 10 to 22% with and USDA soil classification of sandy clay loam and sandy loam.

Title 27 establishes minimum standards for waste management at confined animal facilities. Additional requirements can be established as necessary to prevent degradation of water quality or impairment of beneficial uses. The Regional Board may, at a later date, require ground water compliance monitoring of the pond and dairy facility to confirm and assure that the waste management system protects water quality. Please contact me at (916) 255-0753 if you have any questions on the issues discussed above.

JOHN COLLINS

Associate Land and Water Use Analyst







# California Regional Water Quality Control Board

## Central Valley Region

Robert Schneider, Chair

Winston H. Hickox  
Secretary for  
Environmental  
Protection

Sacramento Main Office  
Internet Address: <http://www.swrcb.ca.gov/~rwqcb5>  
3443 Routier Road, Suite A, Sacramento, California 95827-3003  
Phone (916) 255-3000 • FAX (916) 255-3015



Gray Davis  
Governor

11 May 2001

Western United Dairyman  
Mr. Joe Ramos  
1315 K Street  
Modesto, CA 95350

### REVIEW OF SOIL ASSESSMENT FOR THE EXPANSION OF A DAIRY WASTEPOND AND SETTLING BASIN AT THE JOHN NUNES DAIRY #2, 4207 LINWOOD AVENUE, TURLOCK, STANISLAUS COUNTY

I have reviewed the soil assessment report that you submitted to our office on 26 June 2000 for the John Nunes Dairy #2. Soil samples were collected at a depth between six inches and one foot in the areas for the pond extension and settling basin. The wastepond extension is reported to be 132 by 625 feet with a total depth of 10 feet. The pond was cut 4 feet below grade. The settling basin is reported to be 95 by 625 feet with a depth of 10 feet. The settling basin was also cut 4 feet below grade. The depth to groundwater in the area was not reported; therefore, the separation between the bottom of the pond and settling basin in relation to groundwater depth in the area cannot be determined.

Testing of the soils at the wastepond extension & settling basin by A & L Western Agricultural Laboratories in Modesto reports that the soils meet current state requirements (reference the California Code of Regulations, Subdivision 1, Chapter 7, Subchapter 2). Five (5) samples were collected and analyzed from the wastepond extension. The clay percentages in the samples are reported to vary from 14 to 22% with a United States Department of Agriculture (USDA) soil classification of loam and sandy loam. Seven (7) samples were collected and analyzed from the settling basin. The clay percentages in the samples are reported to vary from 10 to 22% with and USDA soil classification of sandy clay loam and sandy loam.

Title 27 establishes minimum standards for waste management at confined animal facilities. Additional requirements can be established as necessary to prevent degradation of water quality or impairment of beneficial uses. The Regional Board may, at a later date, require ground water compliance monitoring of the pond and dairy facility to confirm and assure that the waste management system protects water quality. Please contact me at (916) 255-0753 if you have any questions on the issues discussed above.

  
JOHN COLLINS

Associate Land and Water Use Analyst





# California Regional Water Quality Control Board

## Central Valley Region

Steven T. Butler, Chair

Winston H. Hickox  
Secretary for  
Environmental  
Protection

Sacramento Main Office  
Internet Address: <http://www.swrcb.ca.gov/~rwqcb5>  
3443 Routier Road, Suite A, Sacramento, California 95827-3003  
Phone (916) 255-3000 • FAX (916) 255-3015



Gray Davis  
Governor

### GENERAL REQUIREMENTS FOR NEW OR EXPANDING DAIRIES

Facility: <u>John Nunes Dairy #2 4207 Linwood Ave</u>		Date		
<u>Turlock</u> Task		Due	Received	Approved
1.	Submit a Notice of Intent (NOI) for stormwater permit (if appropriate <sup>1</sup> )			
2.	File Form No. 200 (RWD) for new dairies or if requested by RWQCB			
3.	Submit Facility Information (use RWQCB or Merced County form)			
A.	Describe dairy location (supply street address if available)			
B.	Identify facility owners and operators			
C.	Provide map showing location of facilities and cropland <sup>2</sup>			
D.	Provide facility plot plan <sup>3</sup>			
E.	Describe manure storage areas (ponds, settling basins, etc.)			
F.	Provide information on animal population and cropland			
G.	Describe cropping and fertilization program <sup>4</sup>			
H.	Describe tailwater control features			
I.	Provide depth to groundwater and regional flow direction			
4.	For any new ponds, submit report containing:		26-Jun-00	
A.	Soils assessment <sup>5</sup>		✓	
B.	Source of any imported soil used for liner (if any)		N/A	
C.	Design and construction detail for liner (if any)		N/A	
D.	Description of how liner is protected when solids are removed		N/A	
E.	Engineer's sign-off for pond design and construction <sup>6</sup>			
5.	Provide analytical results for soil samples <sup>7</sup>		✓	
6.	Describe management of holding ponds and settling basins <sup>8</sup>			
7.	Provide owner's statement that dairy is in compliance with regulations <sup>9</sup>			

Comments: Site assessment by Joe Ramos.

<sup>1</sup> Refer to Fact Sheet No. 1 for Dairies

<sup>2</sup> Use Assessors parcel number and provide acreage. Indicate direction of field slope and show tailwater drainage (if any).

<sup>3</sup> Show corrals, manure storage areas, waste holding ponds, wastewater pumps and pipelines, tailwater ponds, etc.

<sup>4</sup> Indicate where and when wastewater is applied, how manure solids are handled, and how and when commercial fertilizer is used—OR— Attach Nutrient and Irrigation Water Management Plan (refer to Fact Sheet No. 4 for Dairies).

<sup>5</sup> Refer to Fact Sheet No. 6 for Dairies. Provide an assessment of native soils to two feet below base of pond.

<sup>6</sup> Refer to Fact Sheet No. 7 for Dairies.

<sup>7</sup> Collect soil samples from at least two depths (generally 1 to 5 feet) below new corrals and new manure storage areas (excluding ponds). Have the samples analyzed for nitrate and total Kjeldahl nitrogen.

<sup>8</sup> A description of how solids will be removed from the settling basins and holding pond, where the solids will be stored while drying, and how seepage and runoff from the manure storage areas will be managed to prevent infiltration or discharge of waste constituents including salts and nutrients.

<sup>9</sup> Statement that areas at the dairy where manure is generated, collected, or stored meet the requirements in Title 27, Division 2, Chapter 7, Subchapter 2, Article 1 Section 22564, of the California Code of Regulations (CCR).



HOLDING /SEPARATION POND SITE ASSESSMENTS  
JOHN NUNES DAIRY #2  
4207 LINWOOD AVE. TURLOCK, CA. 95380

THE POND LOCATIONS ARE SHOWN ON THE ATTACHED MAP. THE POND EXCAVATIONS WERE COMPLETED EARLIER THIS MONTH. AS SHOWN ON THE ATTACHED SKETCH, THE LAGOON ADDITION IS APPROXIMATELY 132 x 625 FEET IN SIZE AND IS A NORTHERN EXTENSION OF THE DAIRIES EXISTING LAGOON. OVERALL DEPTH OF ADDITION IS APPROXIMATELY 10 FT. (4 FEET BELOW GRADE) AND CORRESPONDS WITH THE EXISTING POND. INTERIOR SIDESLOPE IS 3 TO 1. SEPARATION POND IS APPROXIMATELY 625 FEET LONG BY 95 FEET WIDE BY 10 FEET DEEP (ALSO CUT 4 FT. BELOW GRADE) WITH AN INTERIOR SIDESLOPE OF 2 TO 1. POND WERE CONSTRUCTED BY VIEIRA LAND LEVELING OF TURLOCK.

4 FT. DEPTH OF CUT WAS ESTABLISHED UTILIZING TURLOCK IRRIGATION DISTRICT (TID) TEST WELL MONITORING DATA FOR WELL #341 LOCATED AT TEGNER ROAD AND LINWOOD AVE. WHICH INDICATES AN AVERAGE WATERTABLE DEPTH FOR THIS AREA OF 8.56 FT. MAY 2000 TEST (MOST CURRENT) RECORDED THE CURRENT DEPTH OF THIS WELL AT 8.5 FT.

USDA SOIL SURVEY MAPS FOR EASTERN STANISLAUS COUNTY INDICATE THE SOILS TO BE MADERA AND DINUBA SANDY LOAMS, UNDERLAIN BY CEMENTED HARDPAN WITH VERY SLOW PERMEABILITY. PRELIMINARY SOIL SAMPLINGS TAKEN INDICATED A CLAY CONTENT IN EXCESS OF THE REQUIRED 10% FOR THE NATIVE SOIL. IT WAS DETERMINED AT THAT POINT, THAT PONDS WOULD BE CONSTRUCTED UTILIZING NATIVE SOILS, WITH THE INTERIOR SIDESLOPES DESIGNED TO ALLOW PLACING A CLAY LINER IF SUBSEQUENT TEXTURE TESTS REVEALED SOILS DID NOT MEET/EXCEED THE 10% CLAY CONTENT REQUIREMENT.

UTILIZING A SOIL PROBE AT A DEPTH OF BETWEEN 6 AND 12 INCHES, FIVE SOIL SAMPLES FROM THE LAGOON EXTENSION AND SEVEN FROM THE SEPARATION POND WERE TAKEN AT THE COMPLETION OF THE PROJECT. SAMPLES WERE SUBMITTED TO A&L WESTERN AGRICULTURAL LABORATORIES, OF MODESTO CA. TO MEASURE CLAY CONTENT. SOIL ANALYSIS WAS COMPLETED ON 6/14/00.

RESULTS OF THESE TESTS ARE AS FOLLOWS (REFER TO ATTACHED MAP FOR SPECIFIC LOCATIONS OF TEST SAMPLES):

## LAGOON EXTENSION

SAMPLE LEBW - WEST BOTTOM LAGOON - 16%

SAMPLE LEBC - CENTER BOTTOM LAGOON - 18%

SAMPLE LEBE - EAST BOTTOM LAGOON - 18%

SAMPLE LESNE - NORTHEAST SIDE LAGOON - 22%

SAMPLE LESNW - NORTHWEST SIDE LAGOON - 14%

## SEPARATION POND

SAMPLE SPBW - SEPARATION POND BOTTOM WEST - 14%

SAMPLE SPBC - SEPARATION POND BOTTOM CENTER - 14%

SAMPLE SPBE - SEPARATION POND BOTTOM EAST - 14%

SAMPLE SPSNW - SEPARATION POND SIDE NORTHWEST - 10%

SAMPLE SPSSW - SEPARATION POND SIDE SOUTHWEST - 12%

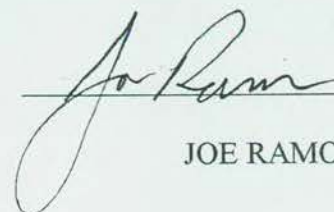
SAMPLE SPSNE - SEPARATION POND SIDE NORTHEAST - 22%

SAMPLE SPSSE - SEPARATION POND SIDE SOUTHEAST - 12%

BASED ON INFORMATION OBTAINED THROUGH SOIL TEXTURE TESTS, INHERENT SOILS MEET CURRENT REQUIREMENTS REGARDING CLAY CONTENT FOR HOLDING PONDS.

IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL ME AT (209) 669-9879.

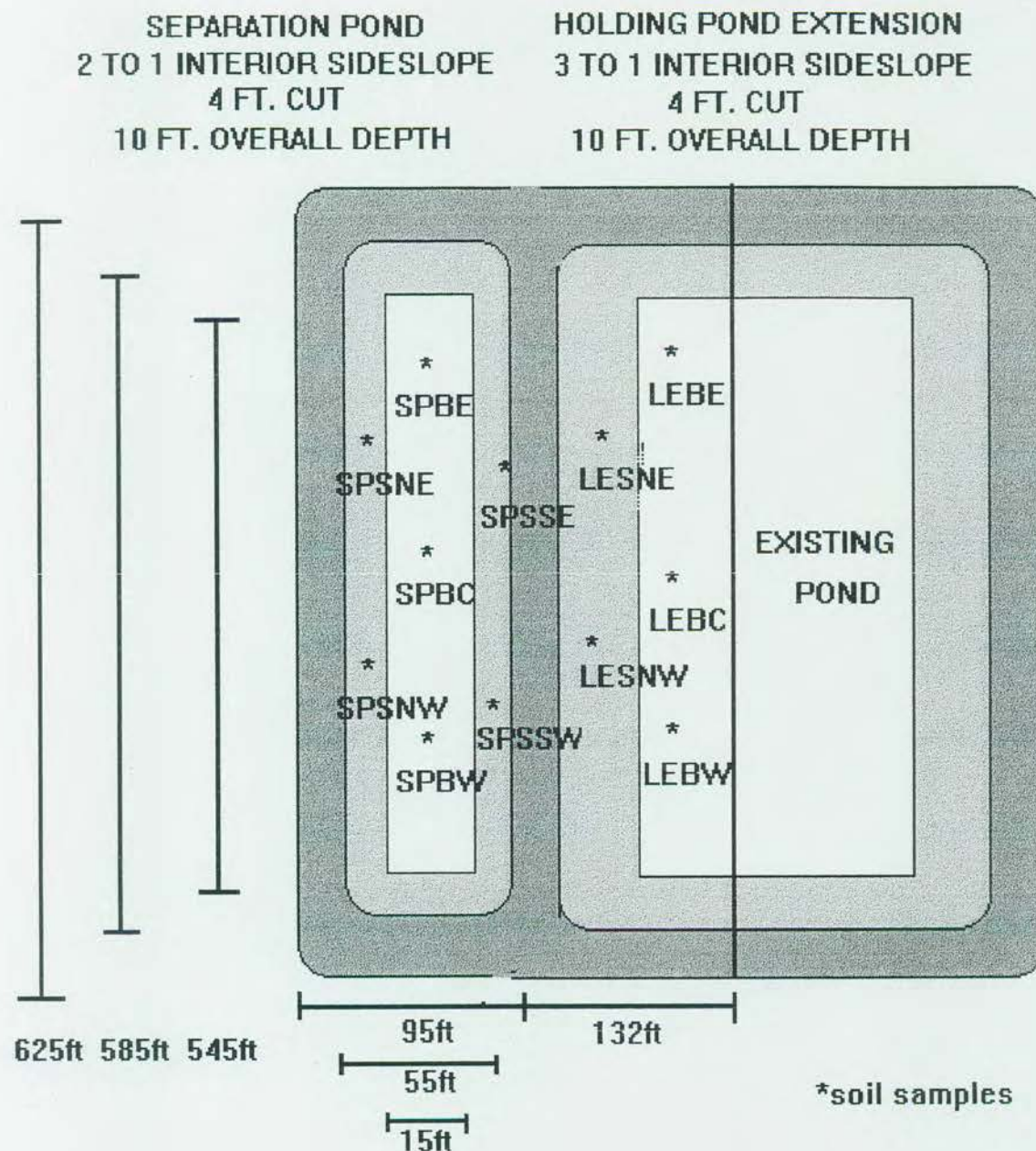
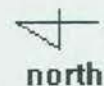
RESPECTFULLY SUBMITTED



---

JOE RAMOS





**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**DAIRY FACILITY INFORMATION**

**A. NAME OF DAIRY OR BUSINESS OPERATING THE DAIRY:** John Nunes Dairy #2

Physical address of dairy:

4207 Linwood AVE	Turlock	Stanislaus	95380
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

TRS Data and Coordinates:

5S	10E	20	Mt. Diablo	37° 28' 46.23" N	120° 53' 45.01" W
Township (T_)	Range (R_)	Section (S_)	Baseline meridian	Latitude (N)	Longitude (W)

Date facility was originally placed in operation: 01/01/1945

Regional Water Quality Control Board Basin Plan designation: San Joaquin River Basin

County Assessor Parcel Number(s) for dairy facility:

0044-0004-0027-0000 0044-0004-0028-0000

**B. OPERATOR NAME:** Nunes, John & Maria E Telephone no.: (209) 667-6584

Landline Cellular

1318 S. Washington RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

Operator should receive Regional Board correspondence (check): ☒ Yes ☐ No

**C. LEGAL OWNER NAME:** Nunes, John & Maria E Telephone no.: (209) 667-6584

Landline Cellular

1318 S. Washington RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

Owner should receive Regional Board correspondence (check): ☒ Yes ☐ No

**D. CONTACT NAME:** Ramos, Joe Telephone no.: (209) 765-7626

Landline Cellular

Title: Project Manager

3213 Liberty Square PKWY	Turlock	CA	95382
Mailing Address Number and Street	City	State	Zip Code

**CONTACT NAME:** Sousa, Manny Telephone no.: (209) 238-3151

Landline Cellular

Title: Professional Engineer

1006 6th ST	Modesto	CA	95354
Mailing Address Number and Street	City	State	Zip Code

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**HERD AND MILKING EQUIPMENT**

**A. HERD AND MILKING**

The existing milk cow dairy is currently regulated under the General Order.

Total number of milk and dry cows combined as a baseline value in response to the Report of Waste Discharge (ROWD) request of October, 2005:

466 milk and dry cows combined (regulatory review is required for expansions of 15% above baseline values)

536 milk and dry cows combined + 15% (pre-expansion limit)

Type of Animal	Present Count	Maximum Count	Daily Flush Hours	Avg Live Weight (lbs)
Milk Cows	460	460	20	1,400
Dry Cows	40	40	0	1,450
Bred Heifers (15-24 mo.)	0	0	0	0
Heifers (7-14 mo.)	0	0	0	0
Calves (4-6 mo.)	0	0	0	
Calves (0-3 mo.)	0	0	0	

Predominant milk cow breed:

Holstein

Average milk production:

65 pounds per cow per day

Average number of milk cows per string sent to the milkbarn:

76 milk cows per string

Number of milkings per day:

2.0 milkings per day

Number of times milk tank is emptied/filled each day:

1.0 per day

Number of hours spent milking each day:

16.0 hours per day

**B. MILKBARN EQUIPMENT AND FLOOR WASH**

Bulk tank wash and sanitizing:

3.0 run cycles/wash

Bulk tank wash vat volume:

50 gallons/cycle

Bulk tank wash wastewater:

150.0 gallons/day

Pipeline wash and sanitizing:

3.0 run cycles/wash

Pipeline wash vat volume:

50 gallons/cycle

Pipeline wash wastewater:

300.0 gallons/day

Reused / recycled water is the source of parlor floor wash water:

☒ Yes   ☐ No

Milkbarn / parlor floor wash volume:

3,000 gallons/day

Plate coolers type:

Well Water Cooled (Water Reused/Recycled)

Plate coolers volume:

7,000 gallons/day

Vacuum pumps / air compressors / chillers type:

Well Water Cooled (Water Reused/Recycled)

Vacuum pumps / air compressors / chillers volume:

3,500 gallons/day

Milkbarn and equipment wastewater volume generated daily:

12,162 gallons/day

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**C. OTHER WATER USES**

Reused/recycled water is the source of herd drinking water: ☐ Yes ☒ No

	Milk Cows	Dry Cows	Bred Heifers (15-24 mo.)	Bred Heifers (7-14 mo.)	Calves (4-6 mo.)	Calves (0-3 mo.)
Number of cows drinking from reusable water:	0	0	0	0	0	0
	of 460	of 40	of 0	of 0	of 0	of 0
Gallons per head per day:	0	0	0	0	0	0

Total reusable water consumed by herd: \_\_\_\_\_ 0 gallons/day

Reused/recycled water is the source of sprinkler pen water: ☒ Yes ☐ No

Number of sprinklers in the holding pen: \_\_\_\_\_ 48 sprinklers

Duration of each sprinkler cycle: \_\_\_\_\_ 3.0 minutes

Number of sprinkler pen runs/milking: \_\_\_\_\_ 1 cycles/milking

Flow rate for each sprinkler head: \_\_\_\_\_ 5.0 gallons/minute

Total sprinkler pen wastewater volume: \_\_\_\_\_ 8,712 gallons/day

Total fresh water used in manure flush lane system(s): \_\_\_\_\_ 0 gallons/day

**D. MISCELLANEOUS EQUIPMENT**

*No miscellaneous equipment entered.*

**E. MILKBARN AND EQUIPMENT SUMMARY**

Number of days in storage period: \_\_\_\_\_ 120 days

Water available for reuse/recycle: \_\_\_\_\_ 10,500 gallons/day

Recycled water reused: \_\_\_\_\_ 11,712 gallons/day

Recycled water leaving system: \_\_\_\_\_ 0 gallons/day

Reusable water balance: \_\_\_\_\_ 0 gallons/day

Volume of milkbarn and equipment wastewater generated for storage period: \_\_\_\_\_ 1,459,440 gallons/storage period

**MANURE AND BEDDING SOLIDS**

**A. IMPORTED AND FACILITY GENERATED BEDDING**

Bedding Type	Imported or Generated (tons)	Density (lbs/cu. ft.)	Applied Separation Efficiency (default)	Solids to Pond (cu. ft./period)
Facility generated bedding	41	40.0	0%	1,025
			Total:	1,025

**B. SOLIDS SEPARATION PROCESS**

Combined manure solids separation efficiency (weight basis): \_\_\_\_\_ 0 %

Description of all solids separation equipment used in flushed lane manure management systems:

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**C. MANURE AND BEDDING SOLIDS SUMMARY**

	cubic feet		gallons	
	day	storage period	day	storage period
Manure generated by the herd (pre-separation):	1,060.88	127,305	7,935.91	952,309
Manure generated by the herd sent to pond(s):	842.24	101,068	6,300.37	756,044
Manure generated by the herd sent to dry lot(s):	218.64	26,237	1,635.54	196,265
Manure solids (herd) removed by separation:	0.00	0	0.00	0
Liquid component in separated solids not sent to pond(s):	0.00	0	0.00	0
Imported and facility generated bedding sent to pond(s):	8.54	1,025	63.90	7,668
Total manure and bedding sent to pond(s):	850.78	102,093	6,364.26	763,711
Residual manure solids and bedding sent to pond(s) w/factor:	71.06	8,528	531.59	63,791
	cubic feet per year		gallons per year	
Residual manure solids and bedding sent to pond(s) w/factor:	25,938		194,030	

**RAINFALL AND RUNOFF**

**A. RAINFALL ESTIMATES**

Rainfall station nearest the facility: Turlock

25 year/24 hour storm event (default NOAA Atlas 2, 1973): 2.50 inches/storage period

25 year/24 hour storm event (user-override):            inches/storage period

Storage period rainfall (default DWR climate data): 8.56 inches/storage period

Storage period rainfall (user-override):            inches/storage period

Flood zone: Zone X

**B. IMPERVIOUS AREAS**

Name	Surface Area (sq. ft.)	Quantity	25yr/24hr Storm Runoff Coefficient	Storage Period Runoff Coefficient	Runoff Destination
Concrete Area behind Hay barn	3,600	1	0.97	0.50	Drains into pond(s).
Holding Area Milk Barn	2,450	1	0.97	0.50	Drains into pond(s).
Main Control Lane/Flush Alley to sand trap	3,216	1	0.97	0.50	Drains into pond(s).
Sand trap	480	1	0.97	0.50	Drains into pond(s).

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

Surface area that does not run off into pond(s): 0 sq. ft.  
 Surface area that runs off into pond(s): 9,746 sq. ft.  
 Total surface area: 9,746 sq. ft.  
 Runoff from normal storage period rainfall: 26,003 gallons/storage period  
 Runoff from normal storage period rainfall with 1.5 factor: 39,004 gallons/storage period  
 25 year/24 hour storm event runoff: 14,733 gallons/storage period  
 Total surface area runoff: 40,736 gallons/storage period  
 Total surface area runoff with 1.5 factor: 53,737 gallons/storage period

**C. ROOF AREAS**

Name	Surface Area (sq. ft.)	Quantity	Runoff Destination
Freestall	62,675	1	Wastewater pond
Hay/feed Barn	6,000	1	corrals
Milk Barn	3,780	1	Wastewater pond

Surface area that does not run off into pond(s): 6,000 sq. ft.  
 Surface area that runs off into pond(s): 66,455 sq. ft.  
 Total surface area: 72,455 sq. ft.  
 Runoff from normal storage period rainfall: 354,611 gallons/storage period  
 Runoff from normal storage period rainfall with 1.5 factor: 531,916 gallons/storage period  
 25 year/24 hour storm event runoff: 103,566 gallons/storage period  
 Total surface area runoff: 458,177 gallons/storage period  
 Total surface area runoff with 1.5 factor: 635,482 gallons/storage period

**D. EARTHEN AREAS**

Name	Surface Area (sq. ft.)	Quantity	25yr/24 Storm Coefficient	Storage Period Coefficient	Runoff Destination
Calf Corrals	5,700	1	0.35	0.20	Drains into pond(s).
North Exercise Pen	146,400	1	0.35	0.20	Drains into pond(s).
South Exercise Pen	102,070	1	0.35	0.20	Drains into pond(s).
South Holding Pen	3,460	1	0.35	0.20	Drains into pond(s).



<p style="text-align: center;"><b>Waste Management Plan Report</b> General Order No. R5-2007-0035, Attachment B July 1, 2010 deadline</p>
---

Surface area that does not run off into pond(s):	<u>0</u> sq. ft.
Surface area that runs off into pond(s):	<u>257,630</u> sq. ft.
Total surface area:	<u>257,630</u> sq. ft.
Runoff from normal storage period rainfall:	<u>274,948</u> gallons/storage period
Runoff from normal storage period rainfall with 1.5 factor:	<u>412,422</u> gallons/storage period
25 year/24 hour storm event runoff:	<u>140,525</u> gallons/storage period
Total surface area runoff:	<u>415,474</u> gallons/storage period
Total surface area runoff with 1.5 factor:	<u>552,948</u> gallons/storage period

**E. TAILWATER MANAGEMENT**

*No fields with tailwater entered.*

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

LIQUID STORAGE

**A. POND OR BASIN DESCRIPTION:** SSB

Pond is rectangular in shape: ☒ Yes ☐ No

Dimensions			
Earthen Length (EL):	<u>590</u> ft.	Earthen Depth (ED):	<u>9</u> ft.
Earthen Width (EW):	<u>50</u> ft.	Side Slope (S):	<u>1.5</u> ft. (h:1v)
Free Board (FB):	<u>2</u> ft.	Dead Storage Loss (DS):	<u>0.0</u> ft.
Calculations			
Liquid Length (LL):	<u>584</u> ft.	Storage Volume Adjusted for Dead Storage Loss:	<u>134,743</u> cu. ft.
Liquid Width (LW):	<u>44</u> ft.		
Pond Surface Area:	<u>29,500</u> sq. ft.	Pond Marker Elevation:	<u>6.5</u> ft.
Storage Volume:	<u>134,743</u> cu. ft.	Evaporation Volume:	<u>135,686</u> gals/period
		Adjusted Surface Area:	<u>25,236</u> sq. ft.

**POND OR BASIN DESCRIPTION:** WWS

Pond is rectangular in shape: ☒ Yes ☐ No

Dimensions			
Earthen Length (EL):	<u>590</u> ft.	Earthen Depth (ED):	<u>11</u> ft.
Earthen Width (EW):	<u>220</u> ft.	Side Slope (S):	<u>1.5</u> ft. (h:1v)
Free Board (FB):	<u>2</u> ft.	Dead Storage Loss (DS):	<u>1.0</u> ft.
Calculations			
Liquid Length (LL):	<u>584</u> ft.	Storage Volume Adjusted for Dead Storage Loss:	<u>924,736</u> cu. ft.
Liquid Width (LW):	<u>214</u> ft.		
Pond Surface Area:	<u>129,800</u> sq. ft.	Pond Marker Elevation:	<u>8.6</u> ft.
Storage Volume:	<u>1,030,014</u> cu. ft.	Evaporation Volume:	<u>669,107</u> gals/period
		Adjusted Surface Area:	<u>124,447</u> sq. ft.

Potential storage losses (due to dead storage): 105,278.0 cubic feet - or - 787,534.1 gallons

Liquid storage surface area: 150,672 sq. ft.

Rainfall onto retention pond(s): 850,041 gallons/storage period

Rainfall runoff into retention pond(s): 655,562 gallons/storage period

Normal rainfall onto retention pond(s) with 1.5 factor: 1,275,062 gallons/storage period

Normal rainfall runoff into retention pond(s) with 1.5 factor: 983,343 gallons/storage period

Storage period evaporation (default): 11.50 inches/storage period

Storage period evaporation (user-override): \_\_\_\_\_ inches/storage period

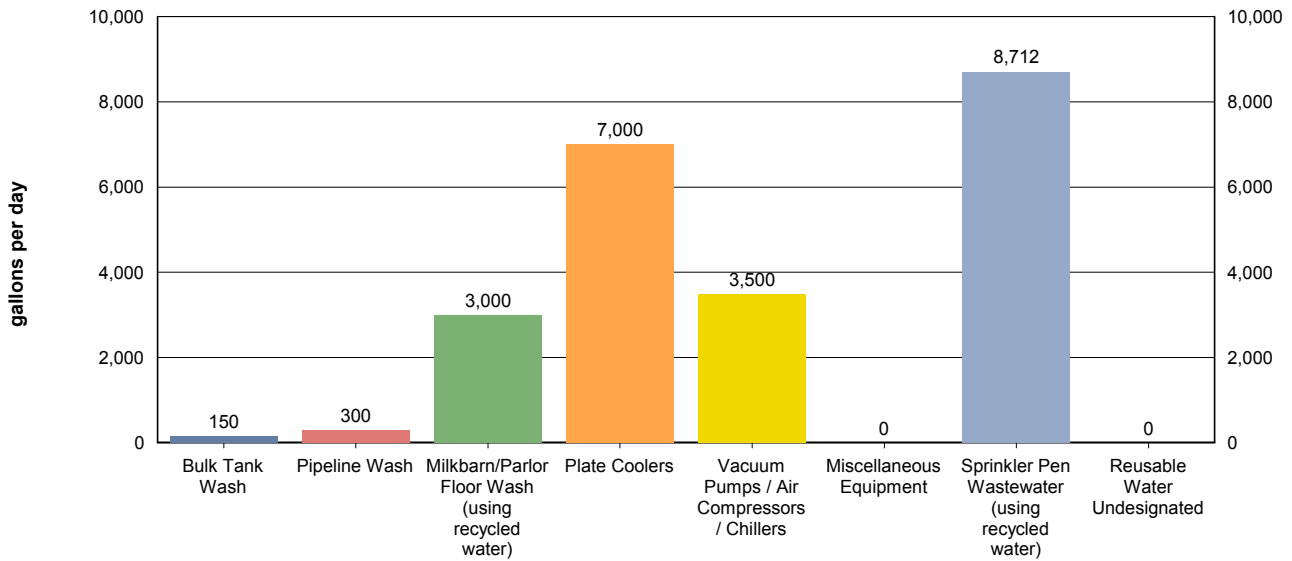
**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

Storage period evaporation volume:	<u>804,793</u> gallons/storage period
Manure and bedding sent to pond(s):	<u>763,711</u> gallons/storage period
Milkbarn water sent to pond(s):	<u>1,459,440</u> gallons/storage period
Fresh flush water for storage period:	<u>0</u> gallons/storage period

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

CHARTS

**A. MILKBARN WASTEWATER SENT TO POND(S)**

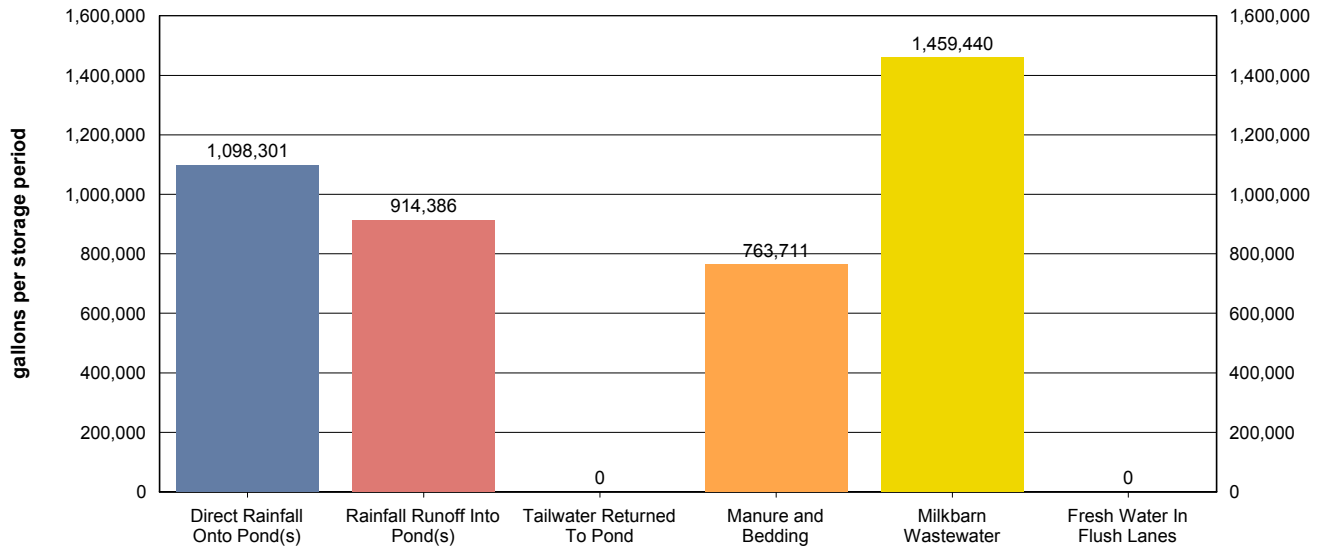


*Values shown in chart are approximate values per day.*

Total milkbarn wastewater generated daily:	12,162 gallons/day
Total milkbarn wastewater generated per period:	1,459,440 gallons/storage period

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**B. PROCESS WASTEWATER (NORMAL PRECIPITATION)**



*Values shown in chart are approximate values for storage period.*

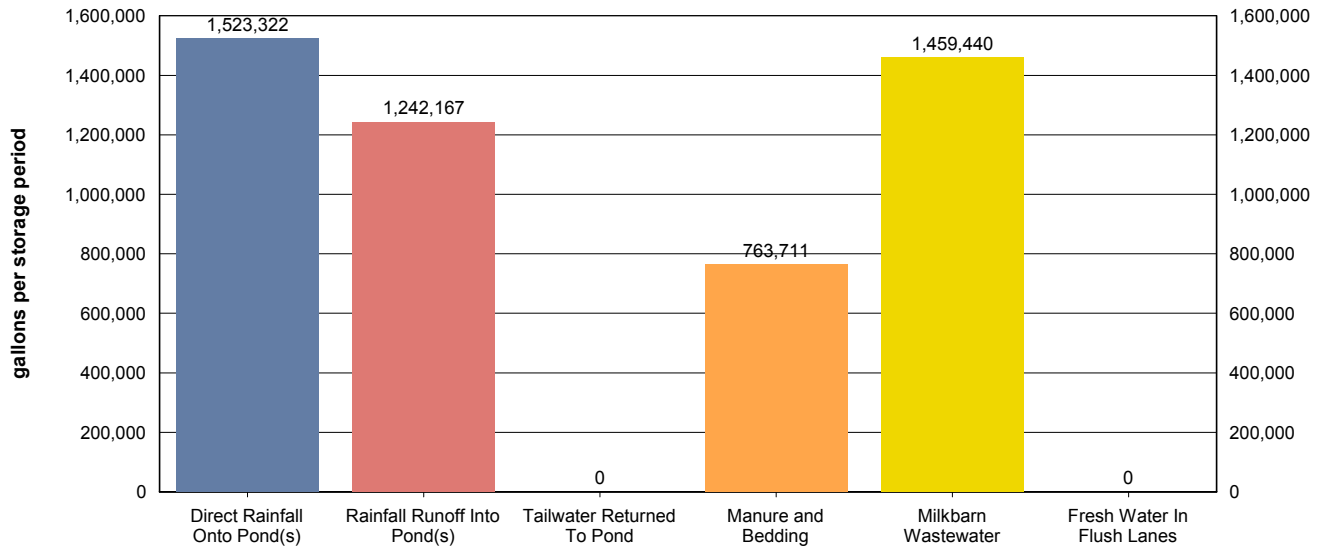
Storage period:	<u>120 days</u>
Total process wastewater generated daily:	<u>35,299 gallons/day</u>
Total process wastewater generated per period:	<u>4,235,839 gallons/storage period</u>
Total process wastewater removed due to evaporation:	<u>804,793 gallons/storage period</u>
Total storage capacity required:	<u>3,431,046 gallons</u>
	<u>458,664 cu. ft.</u>
Existing storage capacity (adjusted for dead storage loss):	<u>7,925,453 gallons</u>
	<u>1,059,479 cu. ft.</u>

**Considering normal precipitation, existing capacity meets estimated storage needs:**      ☒ Yes    ☐ No



**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**C. PROCESS WASTEWATER (NORMAL PRECIPITATION WITH 1.5 FACTOR)**



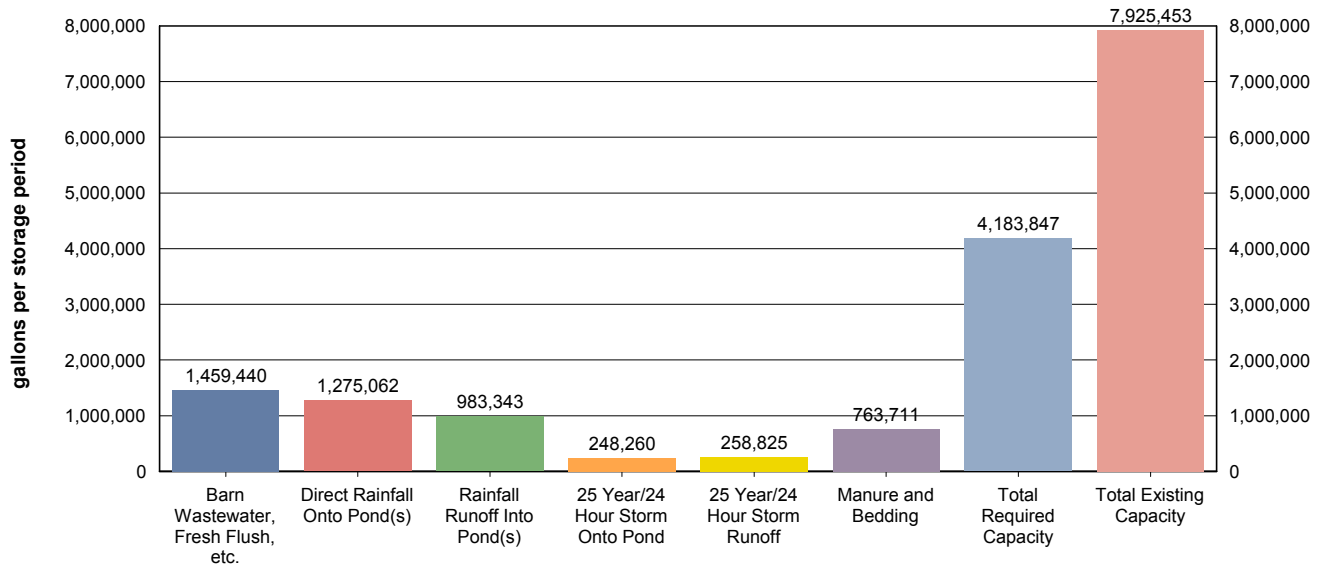
*Values shown in chart are approximate values for storage period.*

Storage period:	<u>120 days</u>
Total process wastewater generated daily:	<u>41,572 gallons/day</u>
Total process wastewater generated per period:	<u>4,988,640 gallons/storage period</u>
Total process wastewater removed due to evaporation:	<u>804,793 gallons/storage period</u>
Total storage capacity required:	<u>4,183,847 gallons</u>
	<u>559,299 cu. ft.</u>
Existing storage capacity (adjusted for dead storage loss):	<u>7,925,453 gallons</u>
	<u>1,059,479 cu. ft.</u>

**Considering factored precipitation, existing capacity meets estimated storage needs:**      ☒ Yes    ☐ No

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**D. STORAGE VOLUME ASSESSMENT (NORMAL PRECIPITATION WITH 1.5 FACTOR)**



*Values shown in chart are approximate values for storage period.*

Storage period:	120 days
Barn wastewater, fresh flush water, and tailwater:	1,459,440 gallons/storage period
Manure and bedding sent to pond:	763,711 gallons/storage period
Precipitation onto pond:	1,275,062 gallons/storage period
Precipitation runoff:	983,343 gallons/storage period
25 year/24 hour storm onto pond:	248,260 gallons/storage period
25 year/24 hour storm runoff:	258,825 gallons/storage period
Residual solids after liquids have been removed (liquid equivalent):	63,791 gallons/storage period
Total process wastewater removed due to evaporation:	804,793 gallons/storage period
Total required capacity:	4,183,847 gallons/storage period
Total existing capacity:	7,925,453 gallons/storage period
<b>Existing capacity meets estimated storage needs:</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**OPERATION AND MAINTENANCE PLAN**

The goal of the Operation and Maintenance Plan is to eliminate discharges of waste or storm water to surface waters from the production area and the protection of underlying soils and ground water.

**A. POND MAINTENANCE**

i. FREEBOARD MONITORING

1. Freeboard will be monitored monthly from June 1 through September 1 (dry season) and weekly from October 1 through May 31 (wet season). The results will be recorded on a Dairy Production Area Visual Inspection Form.
2. Freeboard will be monitored during and after each significant storm event and the results recorded on a Production Area Significant Storm Event Inspection Form.
3. Ponds will be photographed on the first day of each month. Pond photos will be labeled and maintained with the dairy's monitoring records.

ii. PREPARATION FOR MAINTAINING WINTER STORAGE CAPACITY

1. The retention pond(s) will begin to be lowered to the minimum operating level on or before a designated date each year.
2. The minimum operating level will include the necessary storage volume as identified in Section II.A in Attachment B of the General Order.

iii. OTHER POND MONITORING

1. At the time of each monitoring for freeboard, the pond(s) will be inspected for evidence of excessive odors, mosquito breeding, algae, or equipment damage; and issues with berm integrity, including cracking, slumping, erosion, excess vegetation, animal burrows, and seepage. Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Other Pond Monitoring.
2. At the time of each monitoring during and after each significant storm event, the ponds will be inspected for evidence of any discharge and issues with berm integrity, including cracking, slumping, erosion, excess vegetation, animal burrows, and seepage. Any issues identified and corrective actions performed will be recorded on a Production Area Significant Storm Event Inspection Form.

iv. SOLIDS REMOVAL PROCEDURES

1. The average thickness of the solids accumulated on the bottom of the pond(s) will be measured on the designated interval using the owner, operator, and/or designer specified procedure.
2. Once solids/sludge on the bottom of the pond(s) reach the owner, operator, and/or designer specified critical thickness, solids/sludge will be removed so that adequate capacity is maintained.
3. When necessary, solids/sludge will be removed using the owner, operator, and/or designer specified methods for protecting any pond liner.

**OPERATIONS AND MAINTENANCE PLAN FOR POND:** WWS

Dry season freeboard monitoring will occur on the 5th of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 2.5 feet above the pond invert beginning in April of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Storage is visually monitored to evaluate solid accumulation

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

When solids/sludge accumulate to a thickness of 5.5 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Water is added throughout the year to dilute solids. Solids are pumped out during irrigations. If necessary, storage can also be agitated and pumped into slurry wagons or directly excavated for Spring and/or Fall application. I

**OPERATIONS AND MAINTENANCE PLAN FOR POND:** SSB

Dry season freeboard monitoring will occur on the 5th of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 0.0 feet above the pond invert beginning in April of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Storage is visually monitored to evaluate solid accumulation.

When solids/sludge accumulate to a thickness of 1.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids are typically removed from the storage using an excavator.

**B. RAINFALL COLLECTION SYSTEM MAINTENANCE**

i. Annually, rainfall collection systems will be assessed to ensure:

1. Conveyances are free of debris and operating within designer/manufacturer specifications.
2. Components are properly fastened according to designer/manufacturer specifications.
3. All downspouts and related infrastructure are connected to conveyances that divert water away from manured areas.
4. Water from the rainfall collection system(s) is diverted to an appropriate destination.

<b><i>Buildings with rooftop rainfall collection systems</i></b>	Quantity	Surface Area (sq. ft.)
Freestall	1	62,675
Milk Barn	1	3,780
<b><i>Buildings without rooftop rainfall collection systems</i></b>	Quantity	Surface Area (sq. ft.)
Hay/feed Barn	1	6,000

Assessment for buildings with rooftop rainfall collection systems will occur on or before: 5th of October

Assessment for other rainfall collections systems will occur on or before: 5th of October

Description of how rainfall collection systems will be assessed:

Gutters and downspouts will be cleaned and inspected with repairs performed as necessary.

**C. CORRAL MAINTENANCE**

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

- i. Monthly from June 1st through September 30th (dry season) and weekly from October 1st through May 31st (wet season), the perimeter of the corrals and pens will be assessed to ensure that runoff controls such as berms are functioning correctly, and that all water that contacts waste is collected and diverted into the wastewater retention pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Corrals.
- ii. The corrals will be assessed by the designated date to determine:
  1. Whether manure needs to be removed from the corrals based on the owner, operator, and/or designer specified conditions.
  2. Whether there are depressions within the corrals that should be filled/groomed to prevent ponding.
- iii. Removal of manure and/or regrading, when necessary, will be completed on or before the designated month/day of each year.

Day of the month dry season assessment will occur: 5th of each month

Day of the week wet season assessment will occur: Monday

Solid manure removal and regrading assessment will occur on or before: 5th of October

Conditions requiring manure removal and/or regrading:

Solids are removed once per year typically in the Spring.

Solid manure removal and/or regrading will occur on or before: 5th of October

**D. FEED STORAGE AREA MAINTENANCE**

- i. During the dry season and prior to the wet season, the perimeter of storage areas will be assessed to ensure all runoff controls such as berms are functioning correctly and runoff and leachate from the areas are collected and diverted into the wastewater pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Manure and Feed Storage Areas.
- ii. During the wet season, feed storage area(s) will be assessed to determine if there are depressions within any feed storage area that should be filled or repaired to prevent ponding.
- iii. Any necessary regrading/resurfacing and berm/conveyance maintenance will be completed on an annual basis.

Day of the month dry season assessment will occur: 5th of each month

Day of the week wet season assessment will occur: Monday

Regrading/resurfacing and berm maintenance assessment will occur on or before: 5th of October

Regrading/resurfacing and berm maintenance completion will occur on or before: 5th of November

**E. SOLID MANURE STORAGE AREA MAINTENANCE**



**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

- i. During the dry season and prior to the wet season, the perimeter of manure storage areas will be assessed to ensure all runoff and runoff controls such as berms are functioning correctly and runoff and leachate from the areas are collected and diverted into the wastewater pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Manure and Feed Storage Areas.
- ii. During the wet season, manure storage area(s) will be assessed to determine if there are depressions within any manure storage area that should be filled to prevent ponding.
- iii. Any necessary regrading/resurfacing and berm/conveyance maintenance will be completed on an annual basis.

Day of the month dry season assessment will occur: 5th of each month

Day of the month wet season assessment will occur: Monday

Regrading/resurfacing and berm maintenance assessment will occur on or before: 5th of October

Regrading/resurfacing and berm maintenance completion will occur on or before: 5th of November

**F. ANIMAL HOUSING AND FLUSH WATER CONVEYANCE SYSTEM MAINTENANCE**

- i. A map will be attached that identifies critical points for monitoring the animal housing and flush water conveyance system to verify that water is being managed as identified in this Waste Management Plan. These points will be maintained at owner, operator, and/or designer specified intervals.

Animal housing area assessment will occur on or before: 5th of October

Animal housing drainage system maintenance will occur on or before: 5th of November

Animal housing area drainage system assessment and maintenance methods:

Debris is removed from flush alleys and drains as needed.

Pumps are monitored on a daily basis.

Dairy which is older in design, collects water at several locations within the exercise pens (See Figure 2). Current method of drainage is to utilize a portable pump to transfer excess water into flush lanes and to storage ponds.

**G. MORTALITY MANAGEMENT**

- i. Dead animals will be stored, removed, and disposed of properly.

Rendering company or landfill name: Sisk Tallow Co.

Rendering company or landfill telephone number: (209) 667-1451

**H. ANIMALS AND SURFACE WATER MANAGEMENT**

- i. A system will be in place, monitored, and maintained to prevent animals from entering any surface waters when a stream or other surface water crosses or adjoins the corral(s).

Does a stream or any other surface water cross or adjoin the corrals? ☐ Yes ☒ No

**I. MONITORING SALT IN ANIMAL RATIONS**

- i. The combined quantity of minerals as salt in animal drinking water and feed rations will be reviewed by a qualified nutritionist on a routine basis to verify that minerals are limited to the amount required to maintain animal health and optimum production. As feed rations change, mineral content may change.

Assessment interval: Annually

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**J. CHEMICAL MANAGEMENT**

- i. Chemicals and other contaminants handled at the facility will not be disposed of in any manure or process wastewater, storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.

Chemical Name	Quantity	Units	Frequency	Usage Area	Destination (Used Chemical / Container)	Disposal Company		Collection Frequency
						Name	Phone	
Roundup	15	gallons	year	Roadways, field perimeters, etc.	Recycled through Stan. Farm Supply (209) 538-7070			

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**REQUIRED ATTACHMENTS**

The following list, based upon user selections and data entries, describes the minimum required attachments that must be submitted with the Waste Management Plan for the reporting schedule of 'July 1, 2010'.

**A. SITE MAP(S)**

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of the production area including the following in sufficient detail: structures used for animal housing, milk parlor, and other buildings; corrals and ponds; solids separation facilities (settling basins or mechanical separators); other areas where animal wastes are deposited or stored; feed storage areas; drainage flow directions and nearby surface waters; all water supply wells (domestic, irrigation, and barn wells) and groundwater monitoring wells.

Production area map reference number: Figure 2

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of all land application areas (land under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) including the following in sufficient detail: a field identification system (Assessor's Parcel Number; field by name or number; total acreage of each field; crops grown; indication if each field is owned, leased, or used pursuant to a formal agreement); indication of what type of waste is applied (solid manure only, wastewater only, or both solid manure and wastewater); drainage flow direction in each field, nearby surface waters, and storm water discharge points; tailwater and storm water drainage controls; subsurface (tile) drainage systems (including discharge points and lateral extent); irrigation supply wells and groundwater monitoring wells; sampling locations for discharges of storm water and tailwater to surface water from the field.

Application area map reference number: Figure 3

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of all cropland (land that is part of the dairy but not used for dairy waste application) including the following in sufficient detail: Assessor's Parcel Number, total acreage, crops grown, and information on who owns or leases the field. The Waste Management Plan shall indicate if such cropland is covered under the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R5-2006-0053 for Coalition Group or Order No. R5-2006-0054 for Individual Discharger, or updates thereto).

Non-application area map reference number: None

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of all off-property domestic wells within 600 feet of the production area or land application area(s) associated with the dairy and the location of all municipal supply wells within 1,500 feet of the production area or land application area(s) associated with the dairy.

Well area map reference number: Figure 2

Provide a site map (or maps) of appropriate scale to show property boundaries and a vicinity map, north arrow and the date the map was prepared. The map shall be drawn on a published base map (e.g., a topographic map or aerial photo) using an appropriate scale that shows sufficient details of all facilities.

Vicinity map reference number: Figure 1

**B. PROCESS WASTEWATER MAP(S)**

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of the production area including the following in sufficient detail: process wastewater conveyance structures, discharge points, and discharge /mixing points with irrigation water supplies; pumping facilities and flow meter locations; upstream diversion structures, drainage ditches and canals, culverts, drainage controls (berms/levees, etc.), and drainage easements; and any additional components of the waste handling and storage system.

Production infrastructure system area map reference number: Figures 2

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of all land application areas (land under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) including the following in sufficient detail: process wastewater conveyance structures, discharge points and discharge mixing points with irrigation water supplies; pumping facilities; flow meter locations; drainage ditches and canals, culverts, drainage controls (berms, levees, etc.), and drainage easements.

Land application infrastructure system area map reference number: Figures 2&3

**C. EXCESS PRECIPITATION CONTINGENCY REPORT**

*There were no attachment references entered or required for this attachment section.*

**D. OPERATION AND MAINTENANCE PLAN**

Attach a map that identifies critical points for monitoring the system to verify that water is being managed as identified in this Waste Management Plan (see Attachment B, Pg B-7 V.F, V.G, and V.H for additional requirements).

Animal housing assessment map reference number: Figure 2

**E. FLOOD PROTECTION / INUNDATION REPORT**

Provide a published flood zone map that shows the facility is outside the relevant flood zones.

Flood zone map and/or document reference number: 06099CO800E

**F. BACKFLOW PROTECTION**

Attach documentation from a trained professional (i.e. a person certified by the American Backflow Prevention Association, an inspector from a state or local governmental agency who has experience and/or training in backflow prevention, or a consultant with such experience and/or training), as specified in Required Reports and Notices H.1 of Waste Discharge Requirements General Order No. R5-2007-0035, that there are no cross-connections that would allow the backflow of wastewater into a water supply well, irrigation well, or surface water as identified on the Site Map.

Backflow documentation reference number: Backflow certificate

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

CERTIFICATION

**A. DAIRY FACILITY INFORMATION**

Name of dairy or business operating the dairy: John Nunes Dairy #2

Physical address of dairy:

4207 Linwood AVE

Turlock

Stanislaus

95380

Number and Street

City

County

Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

**B. DOCUMENTATION OF QUALIFICATIONS AND PLAN DEVELOPMENT**

*I have reviewed the portion of the waste management plan that is related to storage capacity facility and design specifications in accordance with Item II, Attachment B of the Waste Discharge Requirements General Order for Existing Milk Cow Dairies - Order No. R5-2007-0035 and certify that this plan was prepared by, or under the responsible charge of, and certified by a civil engineer who is registered pursuant to California law or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work.*

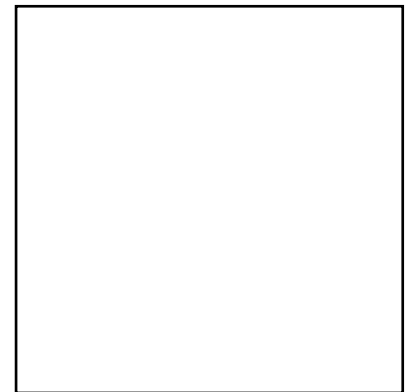
Storage capacity is:

Insufficient

- ☐ Retrofitting Plan/Schedule/Design Criteria attached in accordance with Attachment B, II.B. 1-5 and Attachment B, II. C.

Sufficient

- ☐ Certification 1 - Certified in accordance with Attachment B, II. A. 1-8. (no contingency plan)
- ☐ Certification 2 - Certified in accordance with Attachment B, II. A. 1-8, II. C. (with contingency plan attached)



CIVIL ENGINEER'S WET STAMP

SIGNATURE OF CIVIL ENGINEER

DATE

Manny Sousa

PRINT OR TYPE NAME

1006 6th ST; Modesto, CA 95354

MAILING ADDRESS

(209) 238-3151

PHONE NUMBER

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**C. OWNER AND/OR OPERATOR CERTIFICATION**

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

\_\_\_\_\_  
SIGNATURE OF OWNER

\_\_\_\_\_  
SIGNATURE OF OPERATOR

\_\_\_\_\_  
John & Maria E Nunes

\_\_\_\_\_  
PRINT OR TYPE NAME

\_\_\_\_\_  
PRINT OR TYPE NAME

\_\_\_\_\_  
DATE

\_\_\_\_\_  
DATE





Exhibit 5



Exhibit 5



Exhibit 5





Exhibit 5





Exhibit 5









Exhibit 5





Exhibit 5



Exhibit 5





Exhibit 5













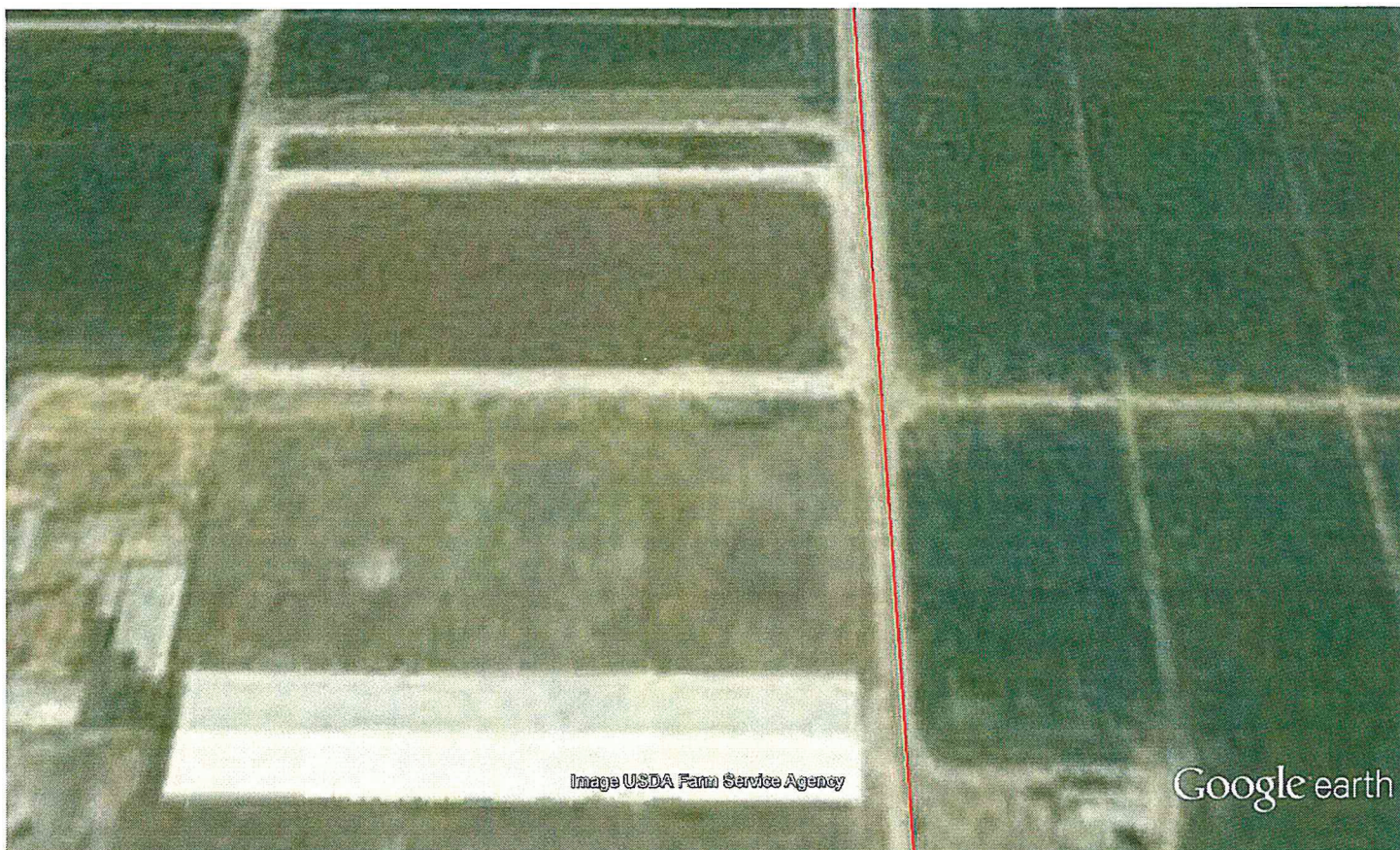
Google earth

feet  
meters | 100 500



8/15/98





Google earth

feet 500  
meters 100



7/30/04